MODEL= 8020-120/8020

10-METER/11-METER ANTENNA

INSTALLATION MANUAL

MP MASTER
MA29809

Scientific Atlanta

MODEL= 8020-120/8020

10-METER/11-METER ANTENNA

INSTALLATION MANUAL

MECHANICAL SAFETY SUMMARY

These are general mechanical safety precautions that are not related to any specific procedure. They are recommended precautions that personnel must understand and apply.

WARNING

Installation or maintenance of antennas may require persons to work at elevated workstations. Whenever persons are working at eight or more feet above ground and not on a guarded platform, they should wear safety belts with at least one, and preferably two, lanyards, with the exception that trained and qualified persons may work up to 25 feet if on an approved ladder. In the above sentence, approved usually means that the ladder. In the above sentence, approved usually means that the ladder is tied off once the person has climbed but before work begins.

WARNING

Overhead hazards, either because items may fall or because a person may strike them unintentionally, are typical around construction sites or during installation of large antennas. It is prudent to adopt the following rules:

1. Never stand underneath anything while it is being hoisted.

2. Always wear a hard hat if someone is above you.

WARNING

Ensure that all electrical tools and equipment are properly grounded.

IMPORTANT

Have an emergency plan. Know the procedures for obtaining first aid and fire-fighting assistance. Plan your work and maintain good housekeeping; the safety and quality of the product are at stake.

ELECTRICAL SAFETY SUMMARY

These are general electrical safety precautions that are not related to any specific procedure. These are recommended precautions that personnel must understand and apply.

WARNING

Care shall be executed, when using metal tools, that circuits are not shorted. Some circuits have high current capability which, when shorted, will flash and may cause burns and/or eye injury.

Remove all jewelry and exposed metal objects from body and clothing before performing maintenance, adjustments, and/or troubleshooting. Before working inside the equipment, remove all power, unless power is required to perform procedures. Do not replace parts with power ON.

Servicing this equipment may require working with protective covers removed and ac power connected. Extreme caution must be exercised during these procedures.

DEATH OR SEVERE INJURY
may result if personnel fail to observe safety precautions.

RESUSCITATION

Personnel working with or near hazardous chemicals or voltages should be familiar with modern methods of resuscitation.

USE SAFETY APPROVED EQUIPMENT

When cleaners are being applied, approved explosion-proof lights, blowers, and other equipment shall be used. Ensure that firefighting equipment is readily available and in working order. Keep cleaners in special polyethylene bottles or in safety cans and in minimum quantities. Discard soiled cloths into safety cans.

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This section of the manual provides instruction for the assembly, installation and maintenance of two separate antenna mount systems. The following are the components of the two systems:

Table 1-1. Antenna Mount Systems Configurations

System Components	Description
Model 8020-120 Mount Model 8084-120 Foundation Models 8132-M,-1,-2 Elevation Actuators Models 8133-M,-1,-2 Azimuth Actuators	180° Total Azimuth Coverage, in three overlapping 120° sectors
Model 8020 Mount Model 8084 Foundation Models 8132-M,-1,-2 Elevation Actuators Models 8133 Azimuth Actuators	180° Continuous Azimuth Coverage

Any components or options that would be supplied with a specific Series 8000 Earth Terminal will be covered in the system manual.

The procedures outlined in this and other manuals, comprising the system, are interrelated in many areas. Therefore, it is very important that the procedures covering all aspects of the entire earth terminal be thoroughly understood as a complete and integral unit. Close adherence to this recommendation will enable work to proceed quickly and smoothly in a safe, professional manner.

The Model 8020-120 and Model 8020 Mounts provide two-axis (elevation-over-azimuth) adjustment for pointing the antenna. In the elevation-over-azimuth configuration, the antenna rotates about two axes, a vertical azimuth axis and a horizontal elevation axis. Pointing to a geostationary satellite requires that the antenna be moved to a specific angle about the azimuth axis, then to a specific angle about the elevation axis. The required sighting angles for any satellite are given in look-up tables which are readily available.

The mount consists of a 20-foot-tall structural tube that is supported at the top by two diagonal leg braces which extend to the rear of the antenna. The bottom of the tube is supported by a pivot bearing and is driven at the ground level location by the azimuth actuator. The elevation actuator is located atop the structural tube and behind the reflector hub. The actuator locations are very convenient to access for maintenance.

Grounding cables are provided to ensure system electrical grounding between the antenna reflector and the antenna mount structure. Tapped holes are provided in the mount base plates for attachment to a suitable foundation grounding system.

Included as standard equipment on the mount are a ladder and work platform assembly. These components provide safe and convenient access to the feed electronics inside the antenna hub and to the elevation drive motor for servicing and inspection. The ladder and platform are designed to be fully compatible with OSHA specifications.

The Model 8132-M Elevation Actuator (manual drive), the Model 8132-1 (single speed) and Model 8132-2 Elevation Actuator (dual speed) will provide elevation coverage of 0-degree to 90-degrees.

The Model 8133-M Azimuth Actuator (manual drive), the Model 8133-1 (single speed) and Model 8133-2 (dual speed) Azimuth Actuator will provide azimuth coverage of 180-degrees through three available 120-degree overlapping sectors. The selecting of alternate sectors can be accomplished within (2) hours by reconfiguring mechanical attachment points on the azimuth actuator. These actuators are used only with the Model 8020-120 Mount.

The Model 8133 Azimuth Actuator (dual speed drive) provides continuous azimuth coverage of 180^{o} and must be used with the Model 8020 Continuous Azimuth Coverage Mount. This actuator is used only with the Model 8020 Mount.

Manual drive elevation and azimuth actuators are operated manually or with an auxiliary power source such as a drill motor. Motor drive actuators may also be operated manually if required.

The Model 8084 and Model 8084-120 foundations are an essential part of the antenna installation. The foundation should be oriented so that the desired pointing angles can be achieved and accurately maintained under maximum wind loads.

The antenna mount is designed to safely support the antenna in winds up to 125 mi/h. The pointing accuracy of the installed antenna is determined by the stiffness of the mount, the antenna, and the foundation. It is recommended that the foundation be designed for a maximum tilt of 0.15 degrees when the 125 mi/h wind loads are applied to the antenna. It is imperative that competent engineering assistance be engaged to assure that the foundation is properly designed for the local site conditions and building codes. The contractor does not imply or warrant that the foundation design shown is appropriate for any particular locality or site condition.

The Model 8084-120 Foundation Kit includes thirty-two foundation anchor bolts and an anchor bolt location template, is available. The template accurately locates the three main foundation plates for the mount and three foundation plate locations for the azimuth actuators.

The Model 8084 Foundation Kit includes twenty foundation anchor bolts and an anchor bolt location template. The template accurately locates the three main foundation plates for the mount and one foundation plate for the azimuth actuator.

A true north-south reference line for the purpose of foundation orientation may be established by reference to: (1) a magnetic compass heading (corrected for declination or variation), (2) a survey from registered benchmarks, or (3) a sighting of Polaris (North Star). This line is used to position the foundation pad and to establish the heading of the foundation anchor bolt pattern. The survey should be done by a qualified surveyor.

The Models 8020-120 and Model 8020 Mounts have been designed in accordance with the American Institute of Steel Construction (AISC) specifications for Design, Fabrication and Erection of Structural Steel Buildings as presented in the Manual of Steel Construction, eighth edition (copyright 1980).

The technical specifications for components described in this manual are presented in Table 1-2.

Table 1-2. 10-Meter and 11-Meter Antenna Mount Systems Technical Specifications

Characteristic	Specification
Mechanical Specifications	
Mount	Elevation-over-azimuth
Coverage	
Azimuth	180° in three overlapping 120° sectors or 180° continuous
Elevation	0 to 90 degrees
Antenna Rotation Rate in High-Speed and Low-Speed Modes (average speed for total arc of travel)	
Azimuth	Low or single speed: .17°/sec High Speed: 1.77°/sec
Elevation	Slow or single speed: 1°/sec High Speed: 1°/sec
Pointing Accuracy	.04 degree rms typical in 45 km/h (30 mi/h) winds gusting to 72 km/h (45 mi/h)
Temperature Range	
Operational	-20°C to +55° (14°F to +131°F)
Survival	-35°C to 60°C (-31°F to +140°F)

Table 1-2. 10-Meter and 11-Meter Antenna Mount Systems
Technical Specifications - continued

Wind Loading at 0°C (+32°F) Air Temperature	
Operational	Winds to 147 km/h (92 mi/h)
Survival with antenna stowed (Zenith)	160 kn/h (125 mi/h) with no ice 87 mi/h with 2-inch radial ice
Survival with antenna at any position (not stowed)	85 mph

WIND LOADING DATA TO BE SUPPLIED LATER

Table 1-3. Elevation and Azimuth Angle Stow Chart for High-Wind Conditions

GENERAL

This portion of the manual provides preparation and installation instructions for the 10-Meter and 11-Meter Antenna Mount Systems.

NOTE

Scientific-Atlanta, Inc. recommends that the Earth Terminal be assembled with a crew of four and using a suitable crane. A 20-ton crane with an 80-foot boom will be required.

CAUTION

All personnel atop the mount must use safety belts. Two recommended safety belt attachment points are:

1. The upper frame area of antenna mount.

2. A properly attached reflector truss.

UNPACKING AND INSPECTION

While unpacking, carefully compare the equipment received with the accompanying packing list, checking for transit damage at the same time. Should errors be noted, notify the contractor and the carrier as soon as possible, but only after thoroughly examining all the packing material carefully.

DAMAGE OR LOSS DURING SHIPMENT

When equipment is damaged or lost in transit, the delivering transportation company is required by law to make notation of damage or loss on the freight bill. The carrier and not the shipper should be charged with all damage or loss. In the event of damage or loss during shipping, contact the responsible carrier of the equipment. Save the shipping carton. The inspector must examine the carton prior to completion of the inspection report.

EQUIPMENT RETURN

The shipping contractor makes a genuine effort to ensure that all items arrive safely and in working order. Occasionally, despite these efforts, equipment will be received which is not in working condition. When this occurs and it is necessary to return the equipment to the manufacturer for either repair or replacement, or when operational equipment requires repair, the return can be expedited if the following procedure is followed:

a. Tag or identify the defective equipment and note the defect and circumstances.

b. Reference the sales order and purchase order and the date the equipment was received.

c. Notify the Scientific-Atlanta customer service department of the defect and request shipping instructions.

TOOLS

The tools required for assembly of the antenna are listed in table 1-4.

Table 1-4. Tools Required For Assembly

Quantity	Description
1 set	Socket, 3/8-inch drive, including 3-inch extension
1 set	Wrench, combination, up to 1-1/2 inch size
1 each	Socket, 2-inch diameter, 4-inches long; used for turning anchor bolt nuts
1 each	Socket, 1-5/8 inch diameter, 2-inches long
1 each	Socket, 1-1/2 inch diameter
4 each	Straps, nylon, 30 feet long, minimum capacity 5,000 pounds each, complete with lifting ring and attachment hooks
1 each	Hoist, lever-operated cable or chain; 2-ton minimum capacity
2 each	Pin, drift, medium size, for aligning 3/8- and 1/2-inch holes
2 each	Pin, drift, large size, for aligning 1-inch holes
1 each	Stepladder, 10 foot
1 each	Ladder, extension, 25 foot
1 each	Wrench, torque, 600 lbf-ft capacity
1 each	Wrench, torque, 6 to 75 lbf-ft capacity

Table 1-4. Tools Required For Assembly - continued

Quantity	Description
1 each	Multiplier, torque wrench, 3/4 drive
1 each	Mallet, rawhide
1 each	Rope, 50 foot, 3/8-inch manila or nylon; used for tie line
1 each	Level (spirit or bubble)
6 each	Clamp, 8-inch, "C" type
1 each	Hammer, ball peen, 24-ounce
1 each	Screwdriver, #2 cross slot
1 each	Screwdriver, medium, straight slot
1 each	Gauge, thickness ranges from 0.010 to 0.030 inch

FASTENER INFORMATION

Each fastener must be correctly tightened at final assembly to ensure that it will carry its design load without working loose under vibration and will not allow slippage or separation of joined members. Thus the structural integrity and pointing accuracy of the total antenna system depends on proper installation of quality fasteners.

The instructions in this manual specify the required torque value for installation of all major structural fasteners as part of the assembly procedure, because the torque value required for a given fastener size may vary with the application. Where torque requirements are not given in the instructions, as with fasteners not in the primary structure, refer to table 1-5 for recommended torque values.

When a calibrated torque wrench is not available, or if an alternate method of establishing wrenching torques is desired, the turn-of-nut method as recommended by the AISC Steel Construction Manual may be used to achieve equivalent results. When this method is used, the fastener must first be brought to a "snug-tight" condition to ensure that the parts of the joint are in solid contact. After all fasteners in a connection have been tightened to the "snug-tight" condition, each fastener shall then be additionally tightened to a degree indicated by the nut rotation, or, if the wrench is applied to head end of the fastener, by bolt rotation relative to the nut.

Table 1-6 gives the required rotation value based on the length of the fastener.

NOTE

The required torque value for the foundation anchor bolts may not be accurately achieved by the turn-of-nut method. For these bolts, an accurate torque value of 400-450 ft-lbf is required.

Table 1-5. Torque Value Required for SAE Grade 5 Fasteners

Fastener Size (inches)	Torque (ft-lbf; tolerance ±10%)
1/4-20	9
5/15-18	18
3/8-16	30
1/2-13	75
3/4-10	260 Except as noted
1-8	600 Except as noted

Table 1-6. Nut Rotation from a Snug-Tight Condition to Full Assembly Torque

Bolt Length	Nut Rotation
Up to and including 4 diameters	1/3 turn, ±30 degrees
Over 4 diameters but not exceeding 8 diameters	1/2 turn, ±30 degrees

INSTALLATION OF ELEVATION ACTUATOR

Installation of elevation actuator consists of the following steps:

a. Before erecting mount, connect lower end of elevation actuator assembly by aligning (2) holes in the actuator bracket with the hole in the frame support. Install 1 1/2-inch dia pin, (2) washers, (2) spacers, and (2) cotter pins (see figure 1-13).

b. Connect the upper end of the elevation actuator assembly by aligning (2) holes in the trunnion with the (2) holes in the A-frame. Install (2) trunnion shafts, (8) 1/2-inch screws and washers (see figure 1-13).

c. Remove elevation tie straps.

ERECTION OF THE ANTENNA MOUNT

The antenna foundation must be structurally adequate and provide suitable anchor bolts located and installed per foundation plan (figure 1-5, sheets 1 and 2). Foundation loads are shown in figure 1-7. The antenna mount erection procedure consists of the following steps:

a. Install (7) 3/4-inch leveling screws (see figure 1-21) in the foundation plates of the (2) diagonal braces (figure 1-9, item 2) and the lower azimuth pivot (figure 1-11, item 6). Tapped holes are provided. Turn each screw until the maximum number of threads protrude below the bottom surface of each plate. This will help in leveling the mount since it is easier to lower the mount than it is to raise the mount.

b. Attach an anchor shackle to lifting eye of one diagonal brace (see figure 1-9, item 2). Using a lifting sling and crane, lift brace at a 45° angle, centering the four holes in the brace plate over the four anchor bolts located at foundation foot 2 (see figure 1-5). Lower the brace onto the anchor bolts until the leveling screws rest on the concrete surface. Install a 1-1/4-nut and washer on each anchor bolt. Install the nuts loosely so that the brace remains erect but is free to move at the upper end.

c. Repeat step b for second diagonal brace using foundation foot 3 location (see figure 1-5).

d. Using a crane and lifting sling, lift mount assembly (weight 8000 lbs) clear of the ground so that it is suspended in a nearly vertical attitude (see figure 1-20 sheet 1 and 2). Position the suspended mount so that (6) holes in the lower azimuth pivot foundation are centered over the (6) anchor bolts located at foundation foot 1 (see figure 1-5). The front of the mount must be in line with foundation heading. Slowly lower the mount, aligning bolts and holes until the leveling screws rest on concrete surface. While maintaining the vertical attitude of the mount, install 1 1/4-inch nuts and washers loosely on each of the (6) anchor bolts.

e. Align the upper end of each diagonal brace (see figure 1-9, item 2) with the appropriate wing of the brace fitting (see figure 1-11, item 2). Loosely attach braces to fittings using (4) splice plates and (20) 1-inch fasteners. (See figure 1-9, item 3.)

NOTE

Final tightening of (20) 1-inch bolts will be accomplished after azimuth actuator is installed. (See azimuth actuator installation, step f.)

f. Using (4) leveling screws previously installed, (see step a) adjust the (2) diagonal brace plates to a distance of 1-inch between the bottom of the plates and the concrete surface. Turn all (8) anchor nuts snugly against the brace plate surface. Do not tighten.

g. Using (3) leveling screws previously installed, (see step a) alternately adjust the lower azimuth pivot plate to the same height ($\pm$ 1/8 inch) as the diagonal brace plate located at foundation foot 2. Ensure that the azimuth pivot plate is approximately level (no more than 1/8-inch difference in height between opposite edges of the plate). Turn the (6) anchor nuts snugly against the anchor plate surface. Do not tighten.

h. Using 3/8-inch fasteners, loosely attach support brace (see figure 1-9, item 4) to diagonal braces (see figure 1-9, item 2).

i. Lower the crane and remove the lifting sling. The mount should now be stable.

INSTALLATION OF AZIMUTH ACTUATOR

Installation of azimuth actuator (see figure 1-14) consists of the following steps:

a. Determine the azimuth actuator operating sector. Identify the installation location of azimuth actuator and note foundation foot number (see figure 1-5, sheet 1 and 2). Install (2) 3/4-inch leveling screws in the azimuth actuator anchor plate. Turn each screw until the maximum number of threads protrude below the bottom surface of each plate.

b. Using a crane and lifting sling, lift azimuth actuator into position aligning the (6) holes in the plate with the (6) anchor bolts until the leveling screws rest on the concrete surface. Loosely install 1-1/4 inch nuts and washers on each of the (6) anchor bolts.

c. Retract the azimuth actuator screw until the distance between the clevis pin and pivot is 40 inches or less. Place a spirit level along the top of the screw cover tube. Use the (2) leveling screws on the anchor plate to adjust height until the actuator is level. Ensure the plate is approximately level (no more than 1/8-inch difference in height between opposite edges of the anchor plate).

d. Connect the azimuth actuator to the mount by aligning the (2) holes in the actuator clevis with the mount bottom plate hole. Install the 1 1/2 dia clevis pin and (2) retaining rings top and bottom. (See figure 1-14.)

NOTE

The azimuth and elevation actuators can be manually operated when power is not available. Release the motor brake if supplied, by turning two external brake release arms 90 degrees. Operate actuators by turning the motor shaft that extends through the brake housing with a 3/4-inch wrench or with a drill motor of 1/2 inch or larger capacity. Always apply the motor brake after operation.

e. Refer back to erection of the mount, step e, and complete assembly of diagonal brace to brace fitting (see figure 1-9, item 2 and 3). Tighten (20) 1-inch bolts to 550 to 600 ft-lbf. Also refer back to step h and complete assembly of support brace to diagonal braces. (See figure 1-9, item 2 and 4). Tighten (4) 3/8-inch fasteners.

FOUNDATION PLATE GROUTING

Grout is used between the concrete surface and the (4) foundation plates to ensure a rigid, load-bearing connection between the mount and the foundation. The grouting procedure uses two 55-pound bags of EMBECO* 636 or equivalent grout and pre-cut lumber for assembling a grout-pouring form around each base plate. It is important that the grout manufacturer's instructions be followed, and these instructions are packaged with the grout supplied. For convenience, the essentials of the procedure are repeated as follows:

*Registered trademark of Master Builder's Co.;, Cleveland, Ohio 44122.

NOTE

Grout must be 1.0-inch thick minimum at all locations. Refer to figure 1-21. Verify that each anchor bolt nut will have no less than two threads above the nut. The normal ambient temperature range for good "early-strength" grouting is 55°F to 80°F. When temperatures at the job site are outside this range, the procedures given here must be modified to compensate for the high or low temperature. Refer to Appendix A for recommendations.

(1) Wash the work surface with water. Keep the surface saturated with water for at least 24 hours prior to grouting.

(2) Using pre-cut lumber and nails, build grouting forms around the four base plates. The form installation shown in figure 1-21 is typical for all base plates.

NOTE

Mix and pour all grout (two 55-pound base) at one time. Pouring must be completed within 10 minutes after mixing.

(3) Mix the grout with water to the "flowable" consistency required for proper filling of the space under each base plate. Two 5-gallon containers are required for mixing, one container for each 55-pound bag of grout. The two batches are mixed at the same time. Use 4-1/2 to 5 quarts of clean water for each bag of grout. Mix according to the following procedure: Put all of the water (4-1/2 to 5 quarts) in a 5-gallon container. Slowly and steadily add the dry grout while continuously mixing. Stir until the mixture is smooth (2 to 3 minutes mixing time). Immediately pour the grout mixture into the forms using the method of step 4. The two batches of grout are required to fill the four forms.

(4) Slide the form all the way to one side to provide a 2-inch-wide cavity. Pour the mixture into the form at this point, allowing it to run under the plate, repeatedly adding mixture and pushing the form toward the plate to help force the mixture underneath. When the space under the plate has been filled, center the form around the base and continue to add grout until the level of the settled grout is about 1/2-inch above the bottom surface of the plate. This head of grout will ensure that the space under the plate is filled.

(5) Immediately after the grout is poured, cover all exposed grout with clean wet rags (do not use burlap). Keep the rags moist for at least two hours.

(6) After the grout has cured for a minimum of six hours, tighten the nuts on all anchor bolts to 400-450 ft-lbf.

ASSEMBLY AND INSTALLATION OF MOUNT PLATFORM

1. Pre-assemble the following items on the ground (see figure 1-9).

   a. Attach platform rail (item 7), (2) rails (item 9 and 12), and (2) support rails (item 10) to platform bottom (item 6) using 3/8-inch fasteners and tighten.

   b. Using 3/8-inch fasteners, loosely attach one end of the (2) platform supports (item 8 and 11) to (2) mount tabs (item 1). Loosely attach one end of the ladder braces (item 15) to the mount tabs (item 1).

2. Installation of Platform.

   a. Lift assembled platform with lifting sling and crane between the two upper mount tabs. Loosely attach platform assembly to (2) mount tabs (item 1) using 3/8-inch fasteners.

   b. Loosely attach ladder braces (item 14 and 15) to ladder (item 13). Attach ladder (item 13) to platform bottom (item 6).

   c. Tighten all remaining 3/8-inch fasteners.

   d. Attach second platform (item 5) to mount (item 1) using 1/4-inch fasteners.

CORROSION PROTECTION AFTER INSTALLATION

After installation, the mount and antenna should be given a final paint touch-up and an application of corrosion inhibitor at several points.

All painting should be done using a good quality commercial-grade paint that is available in local hardware stores.

a. Apply gloss white paint to any surface of the mount that was paint-damaged during shipping or installation. Paint procedures are in the maintenance section.

b. Spray paint the heads, nuts, and exposed ends of all installed fasteners to seal the joints.

INSTALLATION OF ELEVATION ACTUATOR

Installation of elevation actuator consists of the following steps:

a. Before erecting mount, connect lower end of elevation actuator assembly by aligning (2) holes in the actuator bracket with the hole in the frame support. Install 1 1/2-inch dia pin, (2) washers, (2) spacers, and (2) cotter pins (see figure 1-13).

b. Connect the upper end of the elevation actuator assembly by aligning (2) holes in the trunnion with the (2) holes in the A-frame. Install (2) trunnion shafts, (8) 1/2-inch screws and washers (see figure 1-13).

c. Remove elevation tie straps.

ERECTION OF THE ANTENNA MOUNT

The antenna foundation must be structurally adequate and provide suitable anchor bolts located and installed per foundation plan (figure 1-6, sheets 1 and 2). Foundation loads are shown in figure 1-8. The antenna mount erection procedure consists of the following steps:

a. Install (7) 3/4-inch leveling screws (see figure 1-21) in the foundation plates of the (2) diagonal braces (figure 1-10, item 2) and the lower azimuth pivot (figure 1-12, item 6). Tapped holes are provided. Turn each screw until the maximum number of threads protrude below the bottom surface of each plate. This will help in leveling the mount since it is easier to lower the mount than it is to raise the mount.

b. Attach an anchor shackle to lifting eye of one diagonal brace (see figure 1-10, item 2). Using a lifting sling and crane, lift brace at a 45° angle, centering the four holes in the brace plate over the four anchor bolts located at foundation foot 2 (see figure 1-6). Lower the brace onto the anchor bolts until the leveling screws rest on the concrete surface. Install a 1-1/4-nut and washer on each anchor bolt. Install the nuts loosely so that the brace remains erect but is free to move at the upper end.

c. Repeat step b for second diagonal brace using foundation foot 3 location (see figure 1-5).

d. Using a crane and lifting sling, lift mount assembly (weight 8000 lbs) clear of the ground so that it is suspended in a nearly vertical attitude (see figure 1-20 sheet 1 and 2). Position the suspended mount so that (6) holes in the lower azimuth pivot foundation are centered over the (6) anchor bolts located at foundation foot 1 (see figure 1-6). The front of the mount must be in line with foundation heading. Slowly lower the mount, aligning bolts and holes until the leveling screws rest on concrete surface. While maintaining the vertical attitude of the mount, install 1 1/4-inch nuts and washers loosely on each of the (6) anchor bolts.

e. Align the upper end of each diagonal brace (see figure 1-10, item 2) with the appropriate wing of the brace fitting (see figure 1-12, item 2). Loosely attach braces to fittings using (4) splice plates and (20) 1-inch fasteners. (See figure 1-10, item 3.)

NOTE

Final tightening of (20) 1-inch bolts will be accomplished after azimuth actuator is installed. (See azimuth actuator installation, step f.)

f. Using (4) leveling screws previously installed, (see step a) adjust the (2) diagonal brace plates to a distance of 1-inch between the bottom of the plates and the concrete surface. Turn all (8) anchor nuts snugly against the brace plate surface. Do not tighten.

g. Using (3) leveling screws previously installed, (see step a) alternately adjust the lower azimuth pivot plate to the same height ($\pm$ 1/8 inch) as the diagonal brace plate located at foundation foot 2. Ensure that the azimuth pivot plate is approximately level (no more than 1/8-inch difference in height between opposite edges of the plate). Turn the (6) anchor nuts snugly against the anchor plate surface. Do not tighten.

h. Using 3/8-inch fasteners, loosely attach support brace (see figure 1-9, item 4) to diagonal braces (see figure 1-10, item 2).

i. Lower the crane and remove the lifting sling. The mount should now be stable.

INSTALLATION OF AZIMUTH ACTUATOR

Installation of azimuth actuator (see figure 1-15) consists of the following steps:

a. Install (3) 3/4-inch leveling screws in the azimuth actuator anchor plate. Turn each screw until the maximum number of threads protrude below the bottom surface of each plate.

b. Using a crane and lifting sling, lift azimuth actuator into position aligning the (6) holes in the plate with the (6) anchor bolts until the leveling screws rest on the concrete surface. Loosely install 1-1/4 inch nuts and washers on each of the (6) anchor bolts.

c. Use the (3) leveling screws on the azimuth anchor plate to adjust height until level. Ensure the plate is approximately level (no more than 1/8-inch difference in height between opposite edges of the anchor plate).

d. Connect the azimuth actuator to the mount by using (2) splice plates (1) on each side and loosely install (10) 1-inch fasteners (see figure 1-15).

NOTE

The azimuth and elevation actuator can be manually operated when power is not available. Release the motor brake if supplied, by turning two external brake release arms 90 degrees. Operate actuators by turning the motor shaft that extends through the brake housing with a 3/4-inch wrench or with a drill motor of 1/2 inch or larger capacity. Always apply the motor brake after operation.

e. Tighten (20) 1-inch bolts to 550 to 600 ft-lbf on splice plates (see figure 1-15).

f. Install centering link to mount and azimuth actuator (see figure 1-16, notes 1-4).

g. Refer back to erection of the mount, step e, and complete assembly of diagonal brace to brace fitting (see figure 1-10, item 2 and 3). Tighten (20) 1-inch bolts to 550 to 600 ft-lbf. Also refer back to step h and complete assembly of support brace to diagonal braces. (See figure 1-10, item 2 and 4). Tighten (4) 3/8-inch fasteners.

FOUNDATION PLATE GROUTING

Grout is used between the concrete surface and the (4) foundation plates to ensure a rigid, load-bearing connection between the mount and the foundation. The grouting procedure uses two 55-pound bags of EMBECO* 636 or equivalent grout and pre-cut lumber for assembling a grout-pouring form around each base plate. It is important that the grout manufacturer's instructions be followed, and these instructions are packaged with the grout supplied. For convenience, the essentials of the procedure are repeated as follows:

*Registered trademark of Master Builder's Co.;, Cleveland, Ohio 44122.

NOTE

Grout must be 1.0-inch thick minimum at all locations. Refer to figure 1-21. Verify that each anchor bolt nut will have no less than two threads above the nut. The normal ambient temperature range for good "early-strength" grouting is 55°F to 80°F. When temperatures at the job site are outside this range, the procedures given here must be modified to compensate for the high or low temperature. Refer to Appendix A for recommendations.

(1) Wash the work surface with water. Keep the surface saturated with water for at least 24 hours prior to grouting.

(2) Using pre-cut lumber and nails, build grouting forms around the four base plates. The form installation shown in figure 1-21 is typical for all four base plates.

NOTE

Mix and pour all grout (two 55-pound base) at one time. Pouring must be completed within 10 minutes after mixing.

(3) Mix the grout with water to the "flowable" consistency required for proper filling of the space under each base plate. Two 5-gallon containers are required for mixing, one container for each 55-pound bag of grout. The two batches are mixed at the same time. Use 4-1/2 to 5 quarts of clean water for each bag of grout. Mix according to the following procedure: Put all of the water (4-1/2 to 5 quarts) in a 5-gallon container. Slowly and steadily add the dry grout while continuously mixing. Stir until the mixture is smooth (2 to 3 minutes mixing time). Immediately pour the grout mixture into the forms using the method of step 4. The two batches of grout are required to fill the four forms.

(4) Slide the form all the way to one side to provide a 2-inch-wide cavity. Pour the mixture into the form at this point, allowing it to run under the plate, repeatedly adding mixture and pushing the form toward the plate to help force the mixture underneath. When the space under the plate has been filled, center the form around the base and continue to add grout until the level of the settled grout is about 1/2-inch above the bottom surface of the plate. This head of grout will ensure that the space under the plate is filled.

(5) Immediately after the grout is poured, cover all exposed grout with clean wet rags (do not use burlap). Keep the rags moist for at least two hours.

(6) After the grout has cured for a minimum of six hours, tighten the nuts on all anchor bolts to 400-450 ft-lbf.

ASSEMBLY AND INSTALLATION OF MOUNT PLATFORM

1. Pre-assemble the following items on the ground (see figure 1-10).

   a. Attach platform rail (item 7), (2) rails (item 9 and 12), and (2) support rails (item 10) to platform bottom (item 6) using 3/8-inch fasteners and tighten.

   b. Using 3/8-inch fasteners, loosely attach one end of the (2) platform supports (item 8 and 11) to (2) mount tabs (item 1). Loosely attach one end of the ladder braces (item 15) to the mount tabs (item 1).

2. Installation of Platform.

   a. Lift assembled platform with lifting sling and crane between the two upper mount tabs. Loosely attach platform assembly to (2) mount tabs (item 1) using 3/8-inch fasteners.

   b. Loosely attach ladder braces (item 14 and 15) to ladder (item 13). Attach ladder (item 13) to platform bottom (item 6).

   c. Tighten all remaining 3/8-inch fasteners.

   d. Attach second platform (item 5) to mount (item 1) using 1/4-inch fasteners.

CORROSION PROTECTION AFTER INSTALLATION

After installation, the mount and antenna should be given a final paint touch-up and an application of corrosion inhibitor at several points.

All painting should be done using a good quality commercial-grade paint that is available in local hardware stores.

a. Apply gloss white paint to any surface of the mount that was paint-damaged during shipping or installation. Paint procedures are in maintenance section.

b. Spray paint the heads, nuts, and exposed ends of all installed fasteners to seal the joints.

GENERAL

The Model 8020-120 and Model 8020 Mount is designed to require minimal maintenance. The mount requires no lubrication because self-lubricating bearings are used at all pivot points. The azimuth and elevation actuators, however, contain a gearbox and a ballscrew mechanism which require annual inspection and renewal of lubricant as required. The motor drive units are integral assemblies of motor, brakes, and gearing. No service is required for the life of the unit.

This section describes the periodic inspection procedure and the procedures for maintenance of the mechanism, structure, and protective coatings.

At no time should substitute parts be used in any repair of this antenna. Use only authorized parts. Any alternations of the antenna not specifically described in this instruction manual and not authorized by the contractor can void the warranty.

PERIODIC INSPECTION AND MAINTENANCE

At intervals no greater than one year, the following preventive maintenance steps should be performed:

a. Check the foundation for condition. Repair as required.

b. Check the mount for structural condition. Repair or replace components as required. Tighten or replace any loose or missing fasteners in the mount structure.

c. Inspect the mount for corrosion. If significant corrosion is found, the condition should be corrected as described in this section.

d. Inspect all cotter pins and other devices used as pin retainers. Replace if damaged or corroded; tighten if loose.

e. Inspect the azimuth and elevation actuators for amount and condition of lubricant. Use the following procedure for both actuators.

CAUTION

It is important that lubricants used in the actuators be one of the following list of low-temperature greases:

- Texaco Low Temperature #2346 (Specification MIL-G-23827A), in actuator
- Shell Aeroshell #7 (Specification MIL-G-23827A), in actuator

- o Mobil Low Temperature #28 (Specification MIL-G-81322C), in actuator
- o Mobil Mobiltemp SHC 32, in reducer
- o Use Dextron II Automatic Transmission Fluid or equivalent, in reducer.

(1) Actuator Screws. Extend the actuator to full length. Remove the boot clamp at the end of the screw and slide the boot back to expose the full length of the screw. If the screw is found to be coated with grease and the grease appears to be in good condition, no further action is required. If the screw is not adequately coated, or if the grease is dry, hard, or contaminated, the lubricant must be renewed. Do not add grease to the old grease on the screw. Clean the screw of old grease using a solvent. Dry the screw with clean cloths. Apply a thin, uniform coating of a suitable low-temperature grease.

(2) Actuator Lubrication. The Model 8133-M-1, and -2 azimuth actuators have one grease fitting located on the housing, reducer, clevis pin, and on each of (2) pivot pins (see figure 1-18). The Model 8133 Azimuth Actuator has one grease fitting located on each of (4) trunnions (see figure 1-19). The elevation actuator has one grease fitting coated on the housing, reducer, and (2) trunnion shafts (see figure 1-17). Apply grease using a standard automotive type grease gun.

NOTE

When lubricating actuator housings or reducers, care must be taken to prevent excessive grease from damaging the shaft seals.

TOUCH-UP PAINTING NON-REFLECTIVE SURFACES

If significant corrosion is found on any part of the antenna mount and actuators, it should be repaired immediately as follows:

a. Material required:

1. Sandpaper -320 grit
2. Volatile solvent cleaner such as toluene, naphtha or lacquer thinner
3. Rust-Oleum gloss white paint
   Spray cans 2192
   Gallon cans 2766

4. Rust-Oleum Primer No. 1573 - for lightly rusted metal

5. Rust-Oleum Primer No. 769 - for heavily rusted metal

6. Heavy duty detergent

b. Application:

1. Wipe the damaged portion of the finish and surrounding area with solvent. Do not allow solvent to stand on painted areas. Simply wipe surface to remove oily deposits.

2. Wash area thoroughly with detergent, rinse thoroughly with water, and allow to dry.

3. Sand area to remove rust and "feather" a smooth finish from existing painted surface into areas to be repainted. Be sure to remove all loose paint and rust.

4. Heavily rusted metal should be primed by completely covering with Rust-Oleum Primer 769. Lightly rusted or bare metal should be primed by completely covering with Rust-Oleum Primer 1573.

5. Primed areas are topcoated with Rust-Oleum gloss white paint.

6. The paint application instructions on the respective cans should be followed explicitly.

FASTENERS

The fasteners need to be checked to make sure they are in place and have not loosened. If a fastener is found to be loose, or there is cause to check all the fasteners, use a torque wrench to obtain the proper bolt tension. Torque values are given in table 1-5.

NOTE

Galvanized ATM A325 high-strength structural bolts should not be reused. Retightening previously tightened bolts, which have been loosened by the tightening of adjacent bolts, is not considered to be a reuse.

If a fastener should fail and it does not appear to be a result of corrosion, please notify Scientific-Atlanta as soon as possible.

NOTE

All galvanized fasteners, nominal size 1/2-inch and larger, are high-strength structural fasteners meeting the American Society for Testing and Materials (ASTM) A325 specification. If for some reason one has to be replaced, it is imperative that one be obtained that meets the ASTM A325 specification. If unable to locate, contact the factory for either a suggested source or a replacement.

CAUTION

All structural joints have been designed using ASTM A325 high-strength structural fasteners. If a fastener is substituted that does not meet this specification, failure could occur.

If corrosion of a fastener becomes evident, it should be corrected immediately as follows:

a. Determine extent of corrosion. If base material of fastener is corroded, replace with identical size and type. Refer to drawings parts list for fastener size and type.

b. Remove any corrosion from the fastener (if reused) and surrounding area with a wire brush.

c. Clean parts with toluene or naphtha solvent.

d. After fastener is tightened and paint is dry enough to be recoated, spray fastener head, washers and nut with white paint.

RECOMMENDED SPARES

The following are recommended spares.

S-A Stock No.	Description	Qty.
158945	Shear Pin, Actuator	4

INTRODUCTION

Drawings pertaining to the 10-Meter and 11-Meter Antenna Mount Systems are located in this section. Replacement parts are identified on the assembly. Table 1-7 is a listing of the assembly drawings by part number.

Table 1-7. Assembly Drawing Index

Drawing No.	Title	Figure No.
360066	Foundation Kit - Model 8084-120	1-1
268170	Foundation Kit - Model 8084	1-2
360160	Foundation Template - Model 8020-120	1-3
268351	Foundation Template - Model 8020	1-4
360161	Foundation Plan - Model 8020-120	1-5
268410	Foundation Plan - Model 8020	1-6
360162	Foundation Loads - Model 8020-120	1-7
339272	Foundation Loads - Model 8020	1-8
359772	Mount Installation Assembly Model 8020-120	1-9
268222	Mount Installation Assembly - Model 8020	1-10
359632	Mount Structure Assembly - Model 8020-120	1-11
339565	Mount Structure Assembly - Model 8020	1-12
359762 through 359767	Elevation Actuator Installation Models 8132-M, 8133-1, and 8133-2	1-13
359752 through 359757	Azimuth Actuator Installation Models 8133-M, 8133-1, and 8133-2	1-14
268192	Azimuth Actuator Installation - Model 8133	1-15
268986	Centering Link - Model 8133 Azimuth Actuator	1-16
359706	Elevation Actuator Assembly Model 8132-1	1-17

Table 1-7. Assembly Drawing Index - continued

Drawing No.	Title	Figure No.
359665	Azimuth Actuator Assembly Model 8133-1	1-18
339602	Azimuth Actuator Assembly Model 8133	1-19
	Lifting Mount	1-20
364438	Leveling Screws and Grouting	1-21

ITEM OR FIND NO.	QTY REQD	S-A STOCK NO.	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO.	FSCM NO.
5	64	89778	WASHER, FLAT	$1\frac{1}{4}$ STL ZINC PLD		
4	64	336628	NUT, HEX	$1\frac{1}{4}$-8UN		
3	32	336627	ANCHOR BOLT	$1\frac{1}{4}$ 8UN		
2	32	268370	ANCHOR PLATE	3.0X 3.0 X.75 THK		
1	1	360160	FOUNDATION TEMPLATE			

PARTS LIST

Figure 1-1. Foundation Kit - Model 8084-120, 10/11-Meter Antenna Mount Systems, 360066

ITEM OR FIND NO.	QTY REQD	S-A STOCK NO.	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO.	FSCM NO.
4	20	336628	NUT, HEX	$1\frac{1}{4}$-8UN		
3	20	336627	ANCHOR BOLT	$1\frac{1}{4}$ - 8 UN		
2	20	268370	ANCHOR PLATE	3.0 × 3.0 × .75 THK		
1	1	268351	FOUNDATION TEMPLATE			

PARTS LIST

Figure 1-2. Foundation Kit - Model 8084, 10/11-Meter Antenna Mount Systems, 268170

ITEM OR FIND NO.	QTY REQD	S-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO.	FROM NO
203	54	88536	WASHER, FLAT	1/4 STEEL ZINC PLATED		
202	27	88711	NUT, HEX	1/4-20 STEEL ZINC PLATED		
201	27	88524	SCREW, HEX HD	1/4-20X1 1/4 STEEL ZINC PLATED		

PARTS LIST

ITEM OR FIND NO	QTY REQD	S-A STOCK NO.	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FROM NO.
10	1	360171	SPACER BAR			
9	1	360170	SPACER BAR			
8	1	360169	SPACER, BAR			
7	1	360168	SPACER BAR			
6	1	268350	ANGLE TEMPLATE			
5	2	268348	ANGLE TEMPLATE			
4	3	359686	TEMPLATE			
3	2	360163	SPACER BAR			
2	2	360200	TEMPLATE			
1	1	360172	TEMPLATE			

PARTS LIST

Figure 1-3. Foundation Template - Model 8020-120, 10/11-Meter Antenna Mount Systems, 360160 (Sheet 1 of 2)

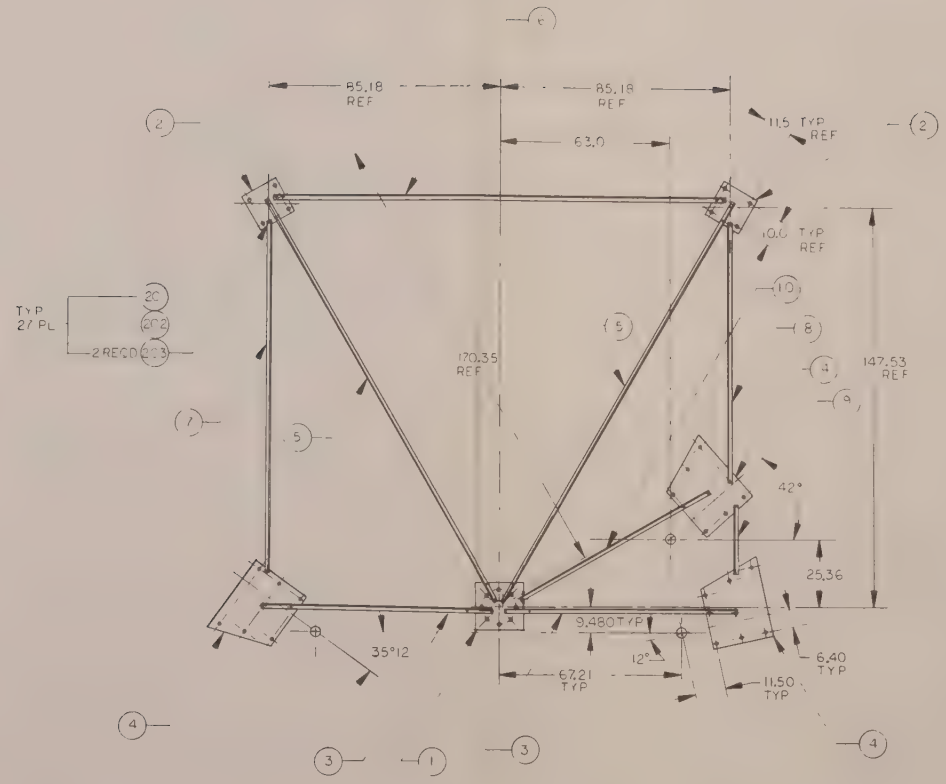
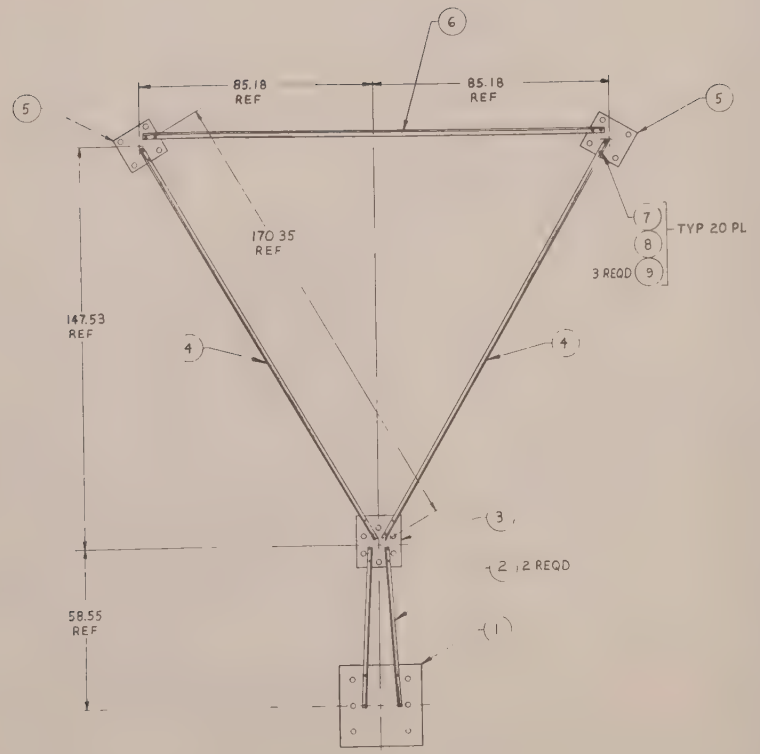


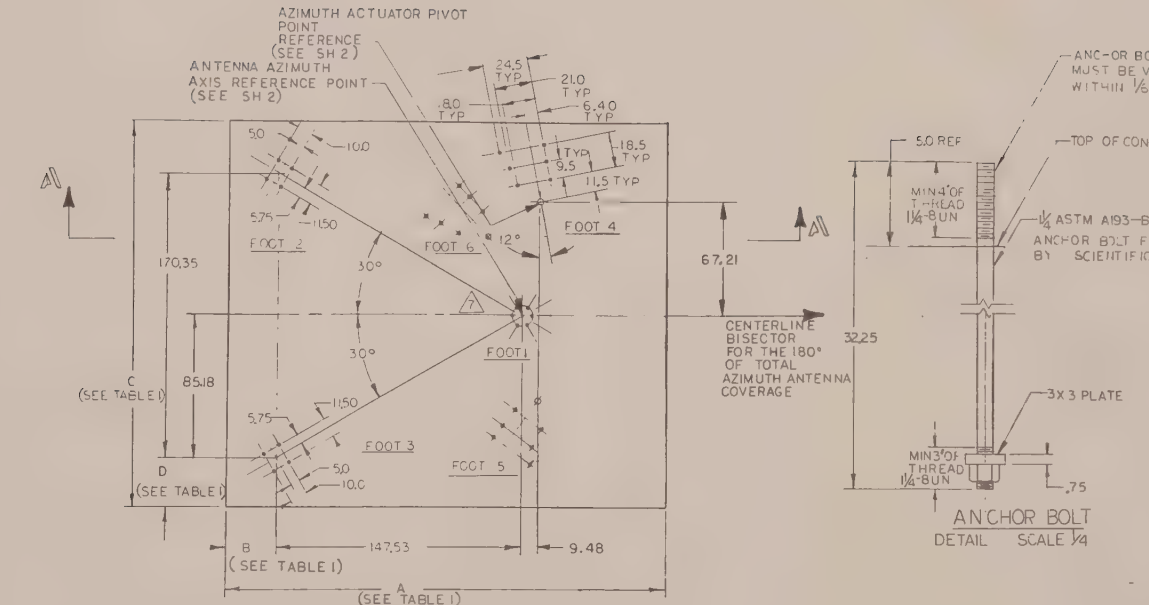
Figure 1-3. Foundation Template - Model 8020-120, 10/11-Meter Antenna Mount Systems, 360160 (Sheet 2 of 2)



ITEM OR FIND NO	QTY REQD	S-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FSCM NO
9	60	73278	WASHER, FLAT	$\frac{1}{4}$ SCDP		
8	20	71508	NUT, HEX	$\frac{1}{4}$-20 SCDP		
7	20	72501	SCREW, HEX HD	$\frac{1}{4}$-20×$1\frac{1}{4}$ SCDP		
6	1	268350	ANGLE, TEMPLATE	164.8 LONG		
5	2	268349	TEMPLATE, BRACE			
4	2	268348	ANGLE, TEMPLATE	69.4 LONG		
3	1	268347	TEMPLATE, BASE, NO.2			
2	2	268360	ANGLE, TEMPLATE	58.2 LONG		
1	1	268124	TEMPLATE, BASE, NO.1			

PARTS LIST

Figure 1-4. Foundation Template - Model 8020, 10/11-Meter Antenna Mount Systems, 268351



NOTES:

1. REINFORCING BARS SHALL CONFORM WITH ASTM A-615-68. ALL BARS SHALL BE GRADE 60.
2. ALL CONCRETE SHALL BE PER BUILDING CODE STD WT 3000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
3. MINIMUM SAFE SOIL BEARING CAPACITY SHALL NOT BE LESS THAN 2000 PSF.
4. CONTRACTOR SHALL VERIFY ANCHOR BOLT PLACEMENT WITH SCIENTIFIC-ATLANTA PRIOR TO CONSTRUCTION.
5. FROST LINE TO BE MAXIMUM OF 3FT BELOW FINISHED GRADE.
6. FOOTINGS DESIGNED FOR WINDS GUSTING TO 125 MPH OR 100 MPH AT 59°F.
7. PROPER ELECTRICAL GROUNDING SHALL BE PROVIDED BY INSTALLING CONTRACTOR TO MEET LOCAL APPLICABLE CODES. THIS MAY TAKE THE FORM OF A BURIED GRID OR A SUITABLE COPPER STAKE DEPENDING ON LOCAL SOIL CONDITIONS. THE MOUNT SHALL BE ELECTRICALLY CONNECTED TO THE GROUND.
8. PROVISIONS MUST BE MADE TO PROVIDE SUITABLE SUPPORT FOR POWER, RF, AND CONTROL CABLES EITHER BY BURIED CONDUIT OR OVERHEAD RACEWAY. IF CONDUIT IS SUPPLIED IT SHALL BE AT LEAST 3 INCH DIAMETER.
9. LIGHTNING ARRESTORS MUST BE PROVIDED ACROSS ALL CABLES LEAVING ANTENNA PER APPLICABLE LOCAL CODES AND N.F.P.A. CODES.
10. DO NOT WELD ANCHOR BOLTS.
11. USE SCIENTIFIC ATLANTA ANCHOR BOLT TEMPLATE (PART NO. 360160) TO ESTABLISH ANCHOR BOLT SPACING DURING FOUNDATION CONSTRUCTION. THE TEMPLATE SHOULD BE SUPPORTED BY A RIGID STRUCTURE TO MAINTAIN ANCHOR BOLT VERTICALITY.
12. SURFACE OF CONCRETE PAD AT THE FOUR FEET SHALL BE LEVEL WITHIN 0.50 INCH.
13. DO NOT TROWEL PAD SURFACE INSIDE ANCHOR BOLT GROUPS. THESE AREAS SHOULD BE LEFT ROUGH FOR GOOD GROUT BOND.

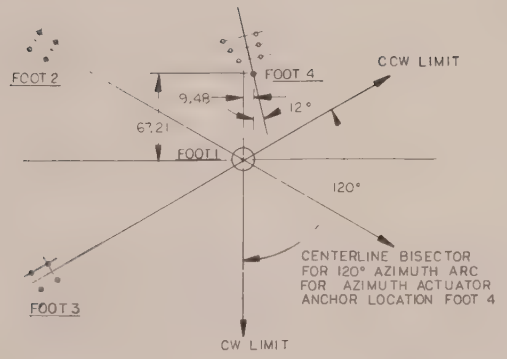
FOUNDATION DESIGN WIND SPEED (MPH)	DIMENSIONS				BOTTOM REINFORCING BAR SIZE
	A	B	C	D	
125	264	30	240	35	NO.7 (7/8" DIA)
100	252	22	210	20	NO.6 (3/4" DIA)

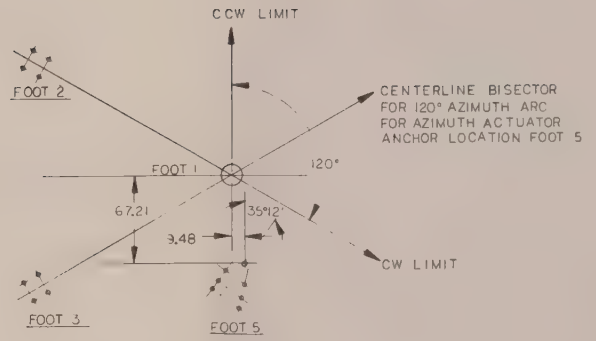
TABLE 1

IMPORTANT NOTICE

SCIENTIFIC-ATLANTA DOES NOT REPRESENT, NOR RECOMMEND THAT ANY PARTICULAR DESIGN OR SIZE OF FOUNDATION IS APPROPRIATE FOR ANY PARTICULAR LOCATION OR INSTALLATION. SINCE SOIL AND ENVIRONMENTAL CONDITIONS, BUILDING CODES, INSTALLATION PRACTICES, AND OTHER FACTORS VARY AMONG DIFFERENT LOCALITIES, THOSE PERSONS INSTALLING ANTENNA MOUNTS ARE CAUTIONED TO SECURE PROFESSIONAL ENGINEERING SERVICES FOR THE DESIGN AND CONSTRUCTION SUPERVISION OF ANTENNA MOUNT FOUNDATION.

Figure 1-5. Foundation Plan - Model 8020-120, 10/11-Meter Antenna Mount Systems, 360161 (Sheet 1 of 2)





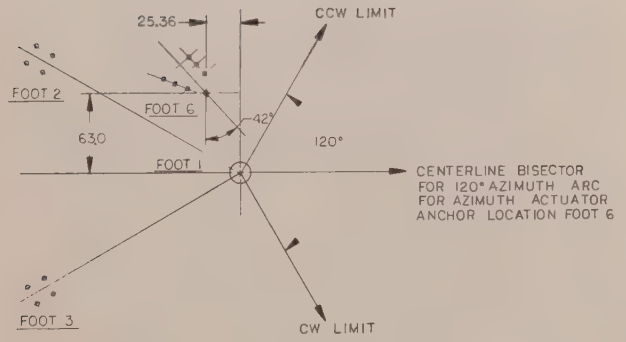
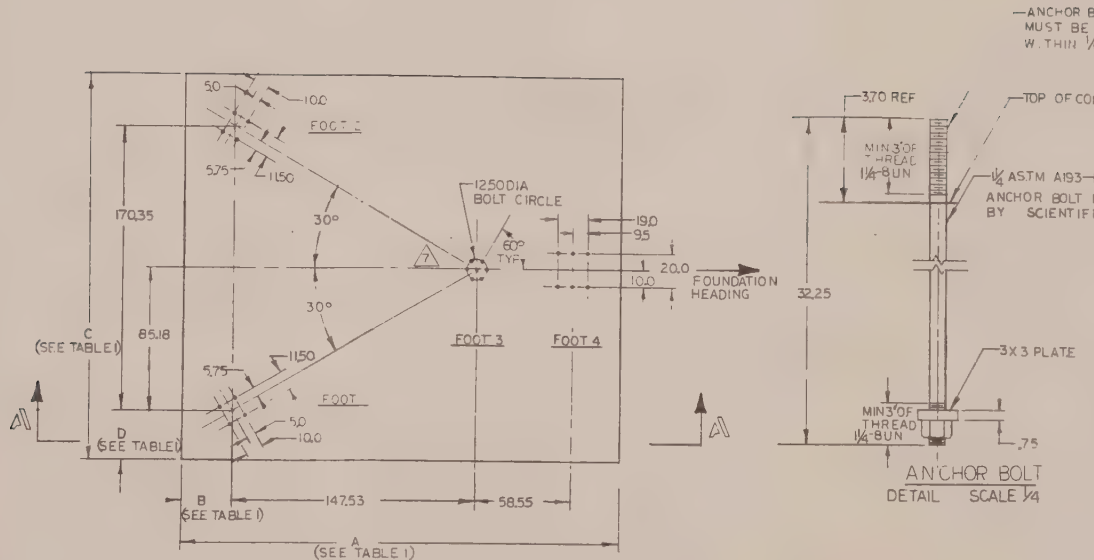


Figure 1-5. Foundation Plan - Model 8020-120, 10/11-Meter Antenna Mount Systems, 360161 (Sheet 2 of 2)



NOTES:

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2. ALL CONCRETE SHALL BE PER BUILDING CODE STD WT 3000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
3. MINIMUM SAFE SOIL BEARING CAPACITY SHALL NOT BE LESS THAN 2000 PSF.
4. CONTRACTOR SHALL VERIFY ANCHOR BOLT PLACEMENT WITH SCIENTIFIC-ATLANTA PRIOR TO CONSTRUCTION.
5. FROST LINE TO BE MAXIMUM OF 3FT BELOW FINISHED GRADE.
6. FOOTINGS DESIGNED FOR WINDS GUSTING TO 125 MPH OR 100 MPH AT 59°F.
7. PROPER ELECTRICAL GROUNDING SHALL BE PROVIDED BY INSTALLING CONTRACTOR TO MEET LOCAL APPLICABLE CODES. THIS MAY TAKE THE FORM OF A BURIED GRID OR A SUITABLE COPPER STAKE DEPENDING ON LOCAL SOIL CONDITIONS. THE MOUNT SHALL BE ELECTRICALLY CONNECTED TO THE GROUND.
8. PROVISIONS MUST BE MADE TO PROVIDE SUITABLE SUPPORT FOR POWER, RF, AND CONTROL CABLES EITHER BY BURIED CONDUIT OR OVERHEAD RACEWAY. IF CONDUIT IS SUPPLIED IT SHALL BE AT LEAST 3 INCH DIAMETER.
9. LIGHTNING ARRESTORS MUST BE PROVIDED ACROSS ALL CABLES LEAVING ANTENNA PER APPLICABLE LOCAL CODES AND N.F.P.A. CODES.
10. DO NOT WELD ANCHOR BOLTS.
11. USE SCIENTIFIC-ATLANTA ANCHOR BOLT TEMPLATE (PART NO. 268351) TO ESTABLISH ANCHOR BOLT SPACING DURING FOUNDATION CONSTRUCTION. THE TEMPLATE SHOULD BE SUPPORTED BY A RIGID STRUCTURE TO MAINTAIN ANCHOR BOLT VERTICALITY.
12. SURFACE OF CONCRETE PAD AT THE FOUR FEET SHALL BE LEVEL WITHIN 0.50 INCH.
13. DO NOT TROWEL PAD SURFACE INSIDE ANCHOR BOLT GROUPS. THESE AREAS SHOULD BE LEFT ROUGH FOR GOOD GROUT-BOND.

FOUNDATION DESIGN WIND SPEED (MPH)	DIMENSIONS A	B	C	D	BOTTOM REINFORCING BAR SIZE
125	284	30	240	35	NO.7 (7/8" DIA)
100	252	22	210	20	NO.6 (3/4" DIA)

TABLE I

IMPORTANT NOTICE

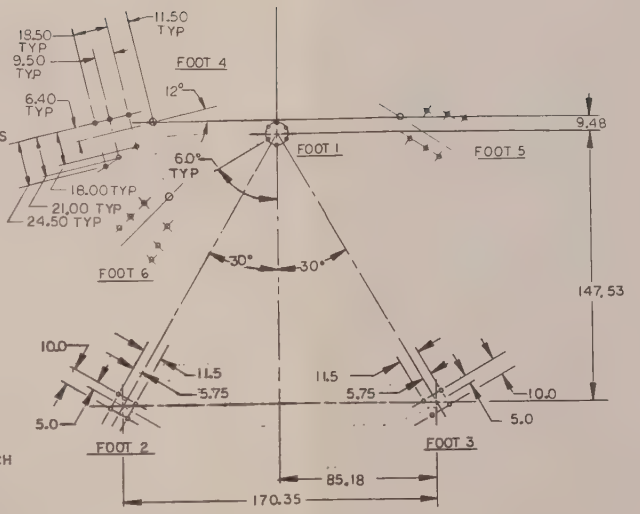
SCIENTIFIC-ATLANTA DOES NOT REPRESENT, NOR RECOMMEND THAT ANY PARTICULAR DESIGN OR SIZE OF FOUNDATION IS APPROPRIATE FOR ANY PARTICULAR LOCATION OR INSTALLATION. SINCE SOIL AND ENVIRONMENTAL CONDITIONS, BUILDING CODES, INSTALLATION PRACTICES, AND OTHER FACTORS VARY AMONG DIFFERENT LOCALITIES, THOSE PERSONS INSTALLING ANTENNA MOUNTS ARE CAUTIONED TO SECURE PROFESSIONAL ENGINEERING SERVICES FOR THE DESIGN AND CONSTRUCTION SUPERVISION OF ANTENNA MOUNT FOUNDATION.

Figure 1-6. Foundation Plan - Model 8020, 10/11-Meter Antenna Mount Systems, 268410

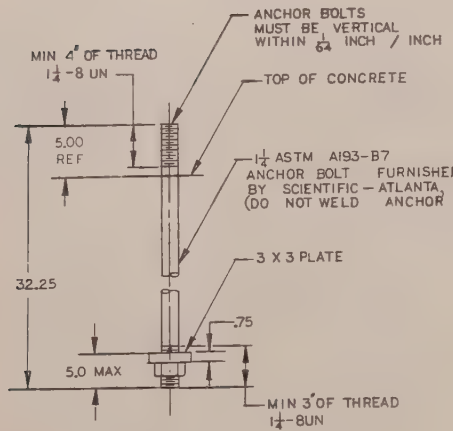
IMPORTANT NOTICE

SINCE SOIL AND ENVIRONMENTAL CONDITIONS, BUILDING CODES, INSTALLATION PRACTICES AND OTHER FACTORS VARY AMONG DIFFERENT LOCALITIES, THOSE PERSONS INSTALLING ANTENNA MOUNTS ARE CAUTIONED TO SECURE PROFESSIONAL ENGINEERING SERVICES FOR THE DESIGN AND CONSTRUCTION SUPERVISION OF ANTENNA MOUNT FOUNDATIONS.
THIS ANTENNA MOUNT ANCHOR BOLT ORIENTATION AND WORSTCASE LOADING TABLE IS FURNISHED TO BE USED TO ESTABLISH REQUIRED DIMENSIONS AND LOCATION OF BOLTS RELATIVE TO EACH OTHER AND AS A GUIDE TO ANTENNA MOUNT CHARACTERISTICS THAT MUST BE CONSIDERED IN THE PROFESSIONAL DESIGN OF A FOUNDATION.
SCIENTIFIC — ATLANTA DOES NOT REPRESENT, NOR RECOMMEND THAT ANY PARTICULAR DESIGN OR SIZE FOUNDATION IS APPROPRIATE FOR ANY PARTICULAR LOCALITY OR INSTALLATION.

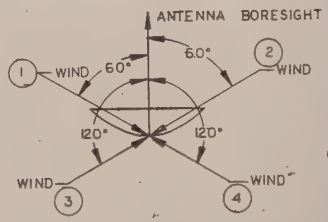
SCIENTIFIC — ATLANTA, INC.



ANCHOR BOLT LOCATION PLAN
SEE SHEET 3 FOR LOCATION FOOT 4, FOOT 5, FOOT 6


ANCHOR BOLTS MUST BE VERTICAL WITHIN 1/64 INCH / INCH
MIN 4" OF THREAD
1¼-8 UN
TOP OF CONCRETE
5.00 REF
1¼ ASTM A193-B7 ANCHOR BOLT FURNISHED BY SCIENTIFIC — ATLANTA, INC. (DO NOT WELD ANCHOR BOLTS)
3 X 3 PLATE
32.25
.75
5.0 MAX
MIN 3" OF THREAD
1¼-8UN

ANCHOR BOLT DETAIL



PLAN VIEW OF ANTENNA

THE WIND DIRECTION IS ALWAYS ASSUMED TO BE PARALLEL TO THE GROUND. THE ANTENNA IS AT 0° ELEVATION. WIND LOADCASES ARE AS FOLLOWS:

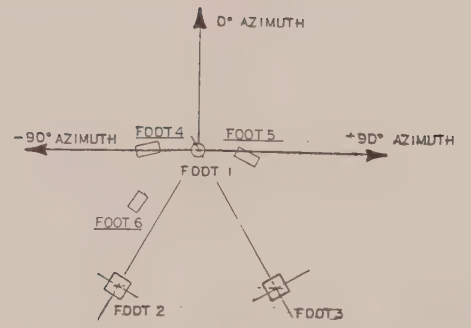
CASE (1) 125 MPH WIND FROM 60° LEFT OF BORESIGHT
CASE (2) 125 MPH WIND FROM 60° RIGHT OF BORESIGHT
CASE (3) 125 MPH WIND FROM 120° LEFT OF BORESIGHT
CASE (4) 125 MPH WIND FROM 120° RIGHT OF BORESIGHT

WIND LOAD CASES

NOTES:

1. TOTAL STIFFNESS OF FOUNDATION AND SOIL TOGETHER MUST BE SUCH AS TO GIVE A MAXIMUM OF 0.1° TILT OF THE FOUNDATION ANCHORS IN A 125 MPH WIND.
2. ANCHOR BOLT LOCATIONS MUST BE WITHIN 1/32 INCH OF DIMENSIONS GIVEN IN ANCHOR BOLT LOCATION PLAN. SCIENTIFIC — ATLANTA ANCHOR BOLT TEMPLATE (PART NO. 268351) IS RECOMMENDED FOR LOCATING ANCHOR BOLTS.
3. SCIENTIFIC — ATLANTA TYPICAL MONOLITHIC SLAB FOUNDATION DESIGNS FOR 100MPH AND 125 MPH WIND LOADS ARE SHOWN ON SCIENTIFIC — ATLANTA DWG NO. 268410.
4. IF CADMIUM OR ZINC PLATED NUTS ARE USED ON ANCHOR BOLTS, A FINAL TORQUE OF 600 FT-LBS SHOULD BE APPLIED AFTER GROUT UNDER MOUNT BASEPLATES HAS CURED. IF FLUOROPOLYMER COATED NUTS ARE USED (FINISH ON SCIENTIFIC — ATLANTA SUPPLIED NUTS) A FINAL TORQUE OF 450 FT-LBS SHOULD BE APPLIED.
5. SURFACE OF CONCRETE FOUNDATION AT THE FOUR MOUNT FEET SHOULD BE LEVEL WITHIN 0.50 INCH.

Figure 1-7. Foundation Loads - Model 8020-120, 10/11-Meter Antenna Mount Systems, 360162 (Sheet 1 of 3)



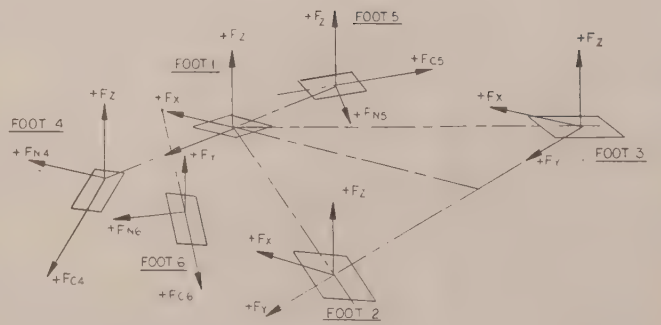
ANTENNA AZIMUTH POSITIONS
FOR FOUNDATION LOAD TABLE BELOW

MAXIMUM TOTAL OVERTURNING MOMENT ON FOUNDATION IS 1339,000 FT-LBS

ANT AZ POSN	WIND LOAD CASE	FOOT 1			FOOT 2			FOOT 3		
		Fx	Fy	Fz	Fx	Fy	Fz	Fx	Fy	Fz
0° Az	1	21722	-30373	93171	-47044	27162	-54321	-43344	-25026	-50049
"	2	21722	30373	93171	-43344	25026	-50049	-47044	-27162	-54321
"	3	-5684	87791	-26939	13029	-7523	15045	679	392	784
"	4	-5684	-87791	-26939	679	-392	784	13029	-7523	15045
+30° Az	1	5111	-61083	77138	-78640	45403	-90806	2137	1233	2468
"	2	32511	39361	81238	-77915	44984	-89969	-2137	-1233	-2468
"	3	19130	-90269	-19291	14218	-8209	16418	-7134	-4118	-8237
"	4	-28975	-84585	-30347	9525	-5499	10999	7134	4118	8237
+60° Az	1	-18482	-68609	37830	-88637	51172	-102347	46137	26658	53316
"	2	40204	30985	44134	-92142	53195	-106394	44219	25530	51060
"	3	48516	91334	-10138	-10681	-6166	12333	-11521	-6652	-13304
"	4	-54200	-81489	-27910	16736	-9663	19326	-2187	-1263	-2526
+90° Az	1	-50265	-70939	-13674	-74577	43059	-86114	76720	44296	88588
"	2	50265	27495	-8725	-81970	47328	-94651	79828	46091	92177
"	3	87605	90709	-2862	3765	-2174	4347	-10907	-6297	-12595
"	4	-87605	-79341	-19357	19978	-11535	23068	-12835	-7411	-14821
-30° Az	1	32511	-39361	81238	-2137	1233	-2468	-77915	-44984	-89969
"	2	5111	61083	77138	2137	-1233	2468	-78640	-45403	-90806
"	3	-28975	84585	-30347	7134	-4118	8237	9525	5499	10999
"	4	19130	-90269	-19291	-7134	4118	-8237	14218	8209	16418
-60° Az	1	40204	-30985	44134	44219	-25530	51060	-92142	-53195	-106394
"	2	-18482	68609	37830	46137	-26658	53316	-88637	-51172	-102347
"	3	-54200	81489	-27910	-2187	1263	-2526	16736	9663	19326
"	4	48516	-91334	-10138	-11521	6652	-13304	-10681	6166	12333
-90° Az	1	50265	-27495	-8725	79828	-46091	92177	-81970	-47328	-94651
"	2	-50265	70939	-13674	76720	-44296	88588	-74577	-43059	-86114
"	3	-87605	79341	-19357	-12835	7411	-14821	19978	11535	23068
"	4	87605	-90709	-2862	-10907	6297	-12595	3765	2174	4347

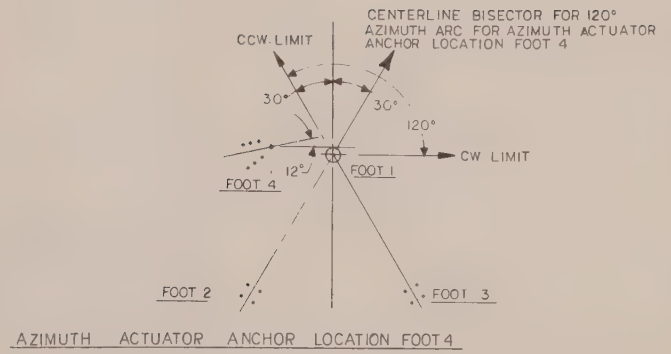
FOOT 4, FOOT 5, FOOT 6 MAXIMUM LOADS (POUNDS)	
F_{C_i}	F_{N_i}
90,269	18,768

TABLE OF FOUNDATION LOADS FOR 125 MPH WIND (59°F) AND DEADWEIGHT (LBS)

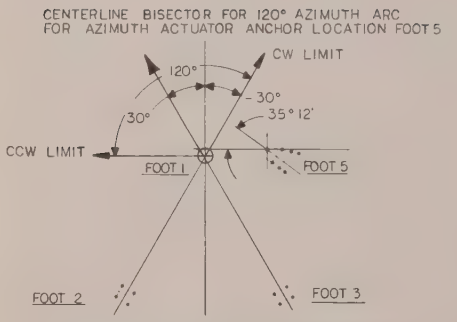


LOAD DIRECTIONAL SIGN CONVENTION

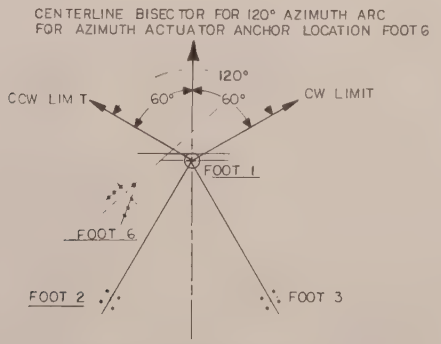
Figure 1-7. Foundation Loads - Model 8020-120, 10/11-Meter Antenna Mount Systems, 360162 (Sheet 2 of 3)



AZIMUTH ACTUATOR ANCHOR LOCATION FOOT 4



AZIMUTH ACTUATOR ANCHOR LOCATION FOOT 5



AZIMUTH ACTUATOR ANCHOR LOCATION FOOT 6

Figure 1-7. Foundation Loads - Model 8020-120, 10/11-Meter Antenna Mount Systems, 360162 (Sheet 3 of 3)

IMPORTANT NOTICE

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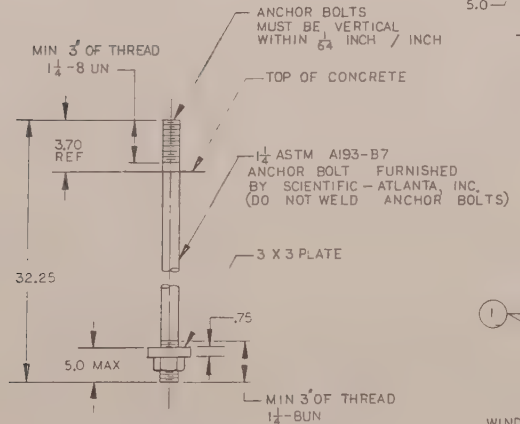
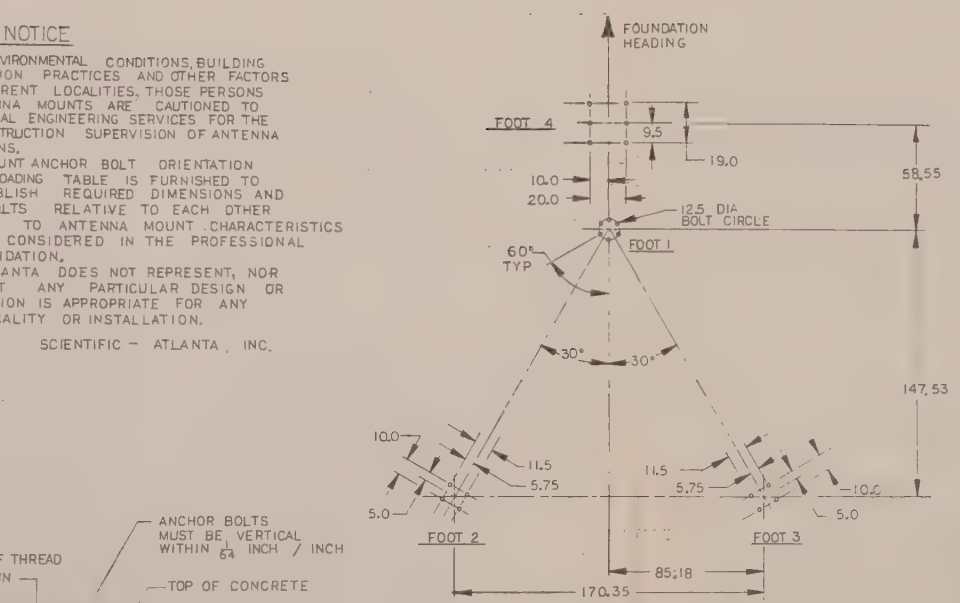
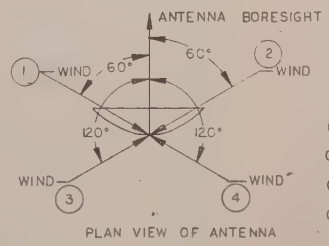
SCIENTIFIC — ATLANTA, INC.


MIN 3" OF THREAD
1¼-8 UN
ANCHOR BOLTS MUST BE VERTICAL WITHIN 1/64 INCH / INCH
TOP OF CONCRETE
3.70 REF
1¼ ASTM A193-B7 ANCHOR BOLT FURNISHED BY SCIENTIFIC — ATLANTA, INC. (DO NOT WELD ANCHOR BOLTS)
3 X 3 PLATE
32.25
.75
5.0 MAX
MIN 3" OF THREAD
1¼-8UN

ANCHOR BOLT DETAIL



ANCHOR BOLT LOCATION PLAN



PLAN VIEW OF ANTENNA

THE WIND DIRECTION IS ALWAYS ASSUMED TO BE PARALLEL TO THE GROUND. THE ANTENNA IS AT 0° ELEVATION. WIND LOADCASES ARE AS FOLLOWS:

CASE (1) 125MPH WIND FROM 60° LEFT OF BORESIGHT
CASE (2) 125MPH WIND FROM 60° RIGHT OF BORESIGHT
CASE (3) 125 MPH WIND FROM 120° LEFT OF BORESIGHT
CASE (4) 125MPH WIND FROM 120° RIGHT OF BORESIGHT

WIND LOAD CASES

NOTES:

1. TOTAL STIFFNESS OF FOUNDATION AND SOIL TOGETHER MUST BE SUCH AS TO GIVE A MAXIMUM OF 0.1° TILT OF THE FOUNDATION ANCHORS IN A 125MPH WIND.
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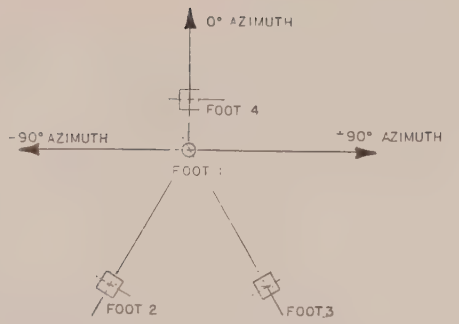
4. IF CADMIUM OR ZINC PLATED NUTS ARE USED ON ANCHOR BOLTS, A FINAL TORQUE OF 600 FT-LBS SHOULD BE APPLIED AFTER GROUT UNDER MOUNT BASEPLATES HAS CURED. IF FLUOROPOLYMER COATED NUTS ARE USED (FINISH ON SCIENTIFIC — ATLANTA SUPPLIED NUTS) A FINAL TORQUE OF 450 FT-LBS SHOULD BE APPLIED.
5. SURFACE OF CONCRETE FOUNDATION AT THE FOUR MOUNT FEET SHOULD BE LEVEL WITHIN 0.50 INCH.

Figure 1-8. Foundation Loads - Model 8020, 10/11-Meter Antenna Mount Systems, 339272 (Sheet 1 of 2)

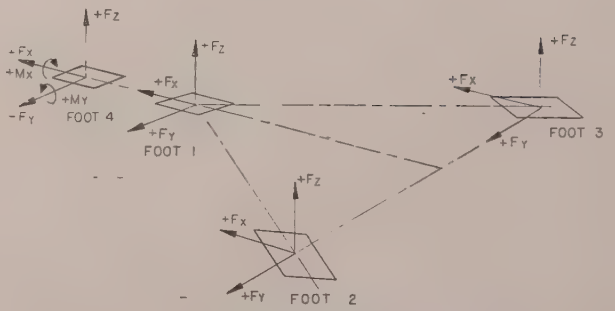


ANTENNA AZIMUTH POSITIONS

MAXIMUM TOTAL OVERTURNING MOMENT ON FOUNDATION IS 1,339,000 FT-LBS

ANT AZ POSN	WIND LOAD CASE	FOOT 1			FOOT 2			FOOT 3			FOOT 4			FOOT 4	
		F_X	F_Y	F_Z	F_X	F_Y	F_Z	F_X	F_Y	F_Z	F_X	F_Y	F_Z	MOM X	MOM Y
0° Az	1	21722	-50373	93171	-47044	27162	-54321	-43344	-25026	-50049	0	52249	0	-43540	0
"	2	21722	50373	93171	-43364	25026	-50049	-47044	-27162	-54321	0	-52249	0	43540	0
"	3	-5684	87791	-26939	13029	-7523	15045	679	392	784	0	-90262	0	75218	0
"	4	-5684	-87791	-26939	679	-392	784	13029	7523	15045	0	90262	0	-75218	0
+30° Az	1	5111	-61083	77138	-78640	45403	-90806	2137	1233	2468	13931	52253	0	-43544	-11609
"	2	32511	39361	81238	-77915	44984	-89969	-2137	-1233	-2468	-13931	-52253	0	43544	11609
"	3	19130	90269	-19291	14218	-8209	16418	-7134	-4118	-8237	-24066	-90269	0	75255	-20055
"	4	-28975	-84585	-30347	9525	-5499	10999	7134	4118	8237	24066	90269	0	-75255	20055
+60° Az	1	-18482	-68609	37830	-88637	51172	-102347	46137	26658	53316	30088	52251	0	-43543	25073
"	2	40204	30985	44134	-92142	53185	-106394	44219	25530	51060	-30088	-52251	0	43543	-25073
"	3	48516	91334	-10138	-10681	-6166	12333	-11521	-6652	-13304	-51978	-90266	0	75222	-43315
"	4	-54200	-81489	-27910	16736	-9663	19326	-2187	-1263	-2526	51978	90266	0	-75222	43313
+90° Az	1	-30265	-70939	-13674	-76577	43059	-86114	76720	44296	88588	52134	52249	0	-43540	43445
"	2	50265	27495	-8725	-81970	47328	-94651	79828	46091	92177	-52134	-52249	0	43540	-43445
"	3	87605	90709	-2862	3785	-2174	4347	-10907	-6297	-12595	-90065	-90262	0	75218	-75054
"	4	-87605	-79341	-19357	19978	-11535	23068	-12835	-7411	-14821	90065	90262	0	-75218	75054
-30° Az	1	32512	-39361	81238	-2137	1233	-2468	-77915	-44984	-89969	-13931	52253	0	-43544	11609
"	2	5111	61083	77138	2137	-1233	2468	-78640	-45403	-90806	13931	-52253	0	43544	-11609
"	3	-28975	84585	-30347	7134	-4118	8237	9525	5499	10999	24066	-90269	0	75255	20055
"	4	19130	-90269	-19291	-7134	4118	-8237	14218	8209	16418	-24066	90269	0	-75255	-20055
-60° Az	1	40204	-30885	44134	44219	-25530	51060	-92142	-53195	-106394	-30088	52251	0	-43543	-25073
"	2	-18482	68609	37830	46137	-26658	53316	-88637	-51172	-102347	30088	-52251	0	43543	25073
"	3	-54200	81489	-27910	-2187	1263	-2526	16736	9663	19326	51978	-90266	0	75222	43315
"	4	48516	-91334	-10138	-11521	6652	-13304	-10681	6166	12333	-51978	90266	0	-75222	-43315
-90° Az	1	50265	-27495	-8725	79828	-46091	92177	-81970	-47328	-94651	-52134	52249	0	-43540	-43445
"	2	-30265	70939	-13674	76720	-44296	88588	-74577	-43059	-86114	52134	-52249	0	43540	43445
"	3	-87605	79341	-19357	-12835	7411	-14821	19978	11535	23068	90065	-90262	0	75218	75054
"	4	87605	-90709	-2862	-10907	6297	-12595	3763	2174	4347	-90065	90262	0	-75218	-75054

TABLE OF FOUNDATION LOADS FOR 125 MPH WIND (59°F) AND DEADWEIGHT
ALL FORCES IN LBS, MOMENTS IN FT-LBS



LOAD DIRECTIONAL SIGN CONVENTION

Figure 1-8. Foundation Loads - Model 8020, 10/11-Meter Antenna Mount Systems, 339272 (Sheet 2 of 2)

NOTE:

⚠1 SEE SH 2.

⚠2 STL ZN PLD IS ABBREVIATION FOR STEEL ZINC PLATED. GALV IS ABBREVIATION FOR GALVANIZED.

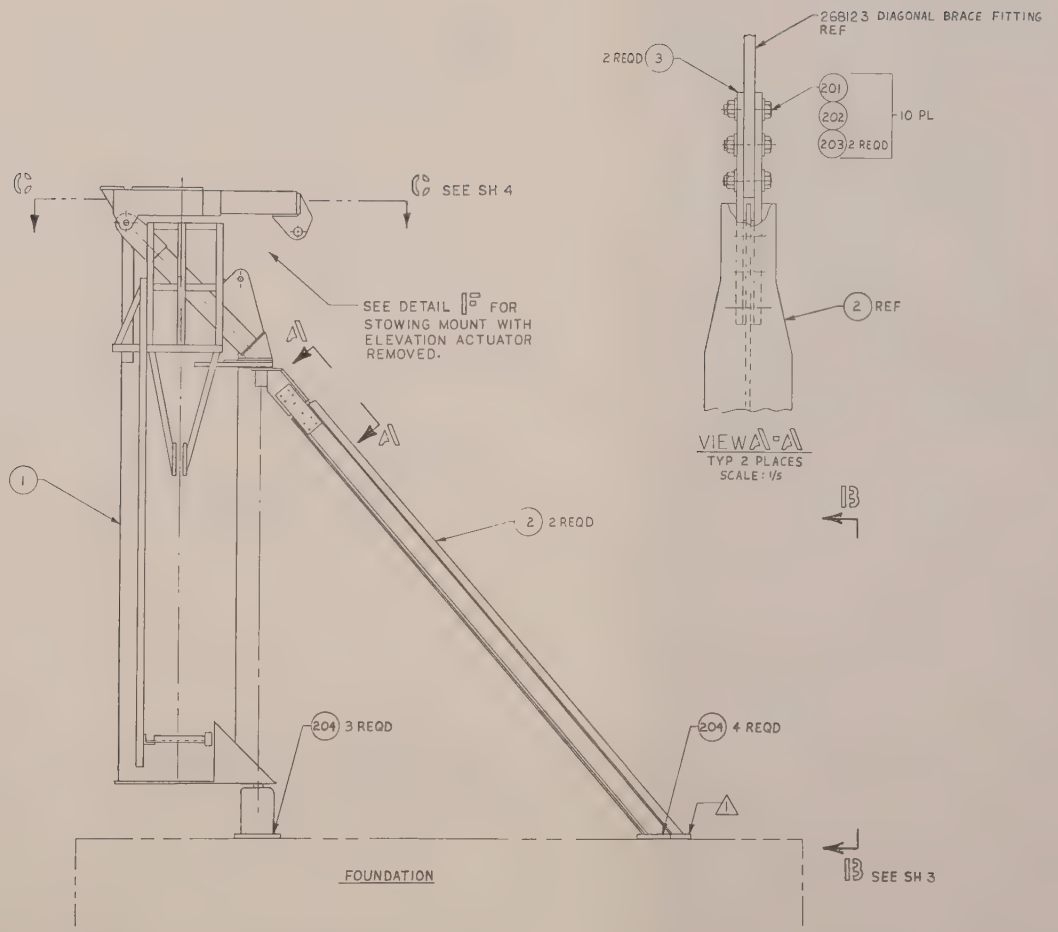
ITEM OR FIND NO.	QTY REQD	D-A STOCK NO.	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FSCM NO
213	4	86082	BOLT, HEX HD	1.0-8 X 3.0 GALV		
212	4	88536	WASHER, FLAT	1/4 STL ZN PLD		
211	4	8871	NUT, HEX	1/4-20 STL ZN PLD		
210	4	89760	SCREW, HEX HD	1/4-20 X 1 1/2 STL ZN PLD		
209	26	88876	SCREW, HEX HD	3/8-16 X 1 1/4 STL ZN PLD		
208	60	88520	WASHER, FLAT	3/8 STL ZN PLD		
207	30	89739	NUT HEX	3/8-16 STL ZN PLD		
206	4	88742	SCREW, HEX HD	3/8-16 X 1 1/2 STL ZN PLD		
205						
204	7	336650	SCREW, SET, SQ HD	3/4-10 X 3.0		
203	44	85344	WASHER, FLAT	1.0 ID GALV		
202	24	85840	NUT, HEX	1.0-8 GALV		
201	20	85836	BOLT, HEX HD	1.0-8 X 4.0 GALV		
200				⚠2		

PARTS LIST

ITEM OR FIND NO	QTY REQD	D-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FSCM NO.
16	4	339605	STOW BRACE			
15		268507	BRACE			
14	1	268506	BRACE			
13	1	359705	LADDER			
12	1	268424	RAIL			
11	1	268427	PLATFORM SUPPORT			
10	2	268426	SUPPORT RAIL			
9		268423	RAIL			
8	1	268439	SUPPORT			
7	1	268425	PLATFORM RAIL			
6	1	268422	PLATFORM BOTTOM			
5	1	339458	PLATFORM			
4	1	268609	SUPPORT BRACE			
3	4	268358	SPLICE PLATE			
2	2	268337	DIAGONAL BRACE			
1	1	359683	MOUNT STRUCTURE			

PARTS LIST

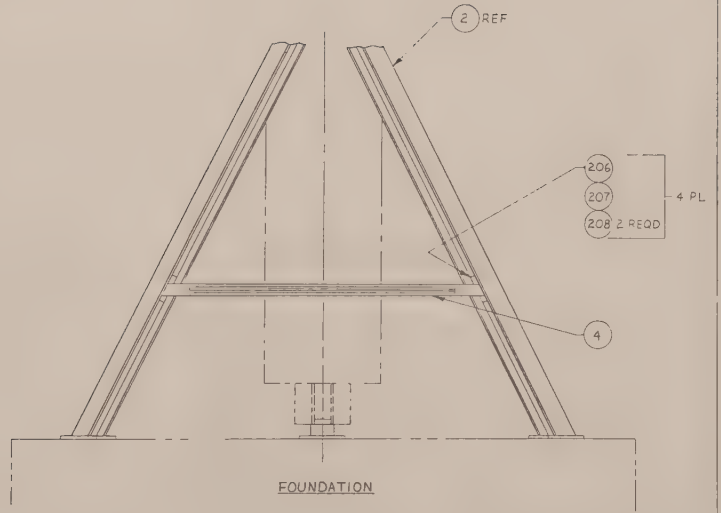
Figure 1-9. Mount Installation Assembly - Model 8020-120, 10/11-Meter Antenna Mount Systems, 359772 (Sheet 1 of 5)



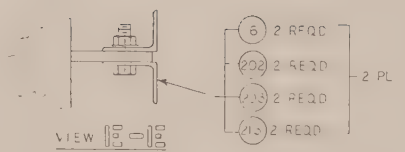
NOTE:

⚠1 ANCHOR BOLTS, NUTS AND WASHERS SUPPLIED IN FOUNDATION KIT.

Figure 1-9. Mount Installation Assembly - Model 8020-120, 10/11-Meter Antenna Mount Systems, 359772 (Sheet 2 of 5)

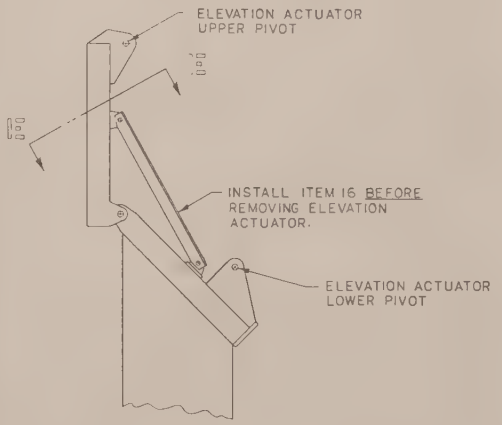


VIEW B-B



VIEW B-B

SCALE 1/4



DETAIL B

ITEM 16 IS NOT REQUIRED FOR MOUNT INSTALLATION. IT IS USED ONLY WHEN THE ENTIRE ANTENNA HAS BEEN INSTALLED AND THE ELEVATION ACTUATOR MUST BE REMOVED.

Figure 1-9. Mount Installation Assembly - Model 8020-120,

10/11-Meter Antenna Mount Systems, 359772 (Sheet 3 of 5)

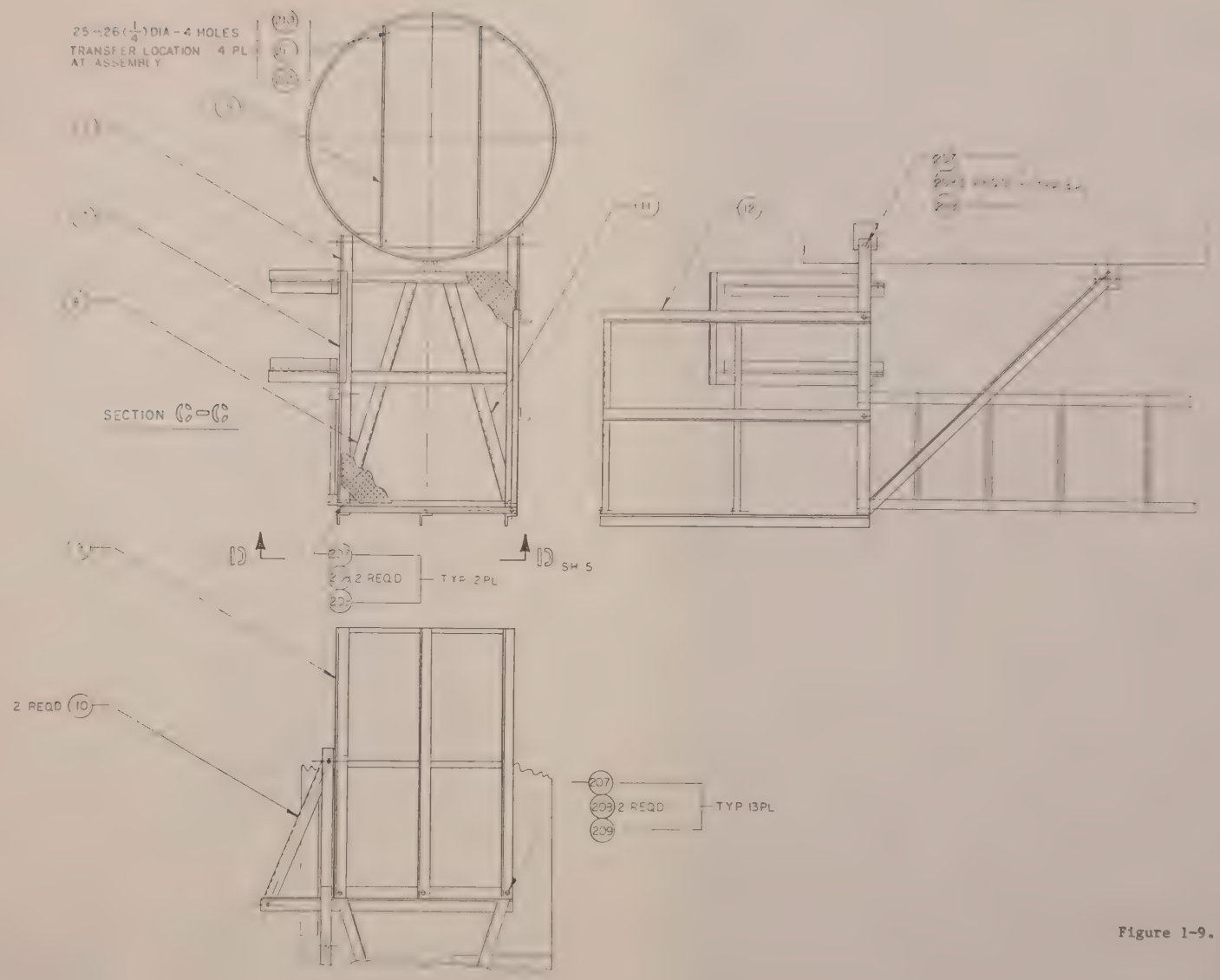
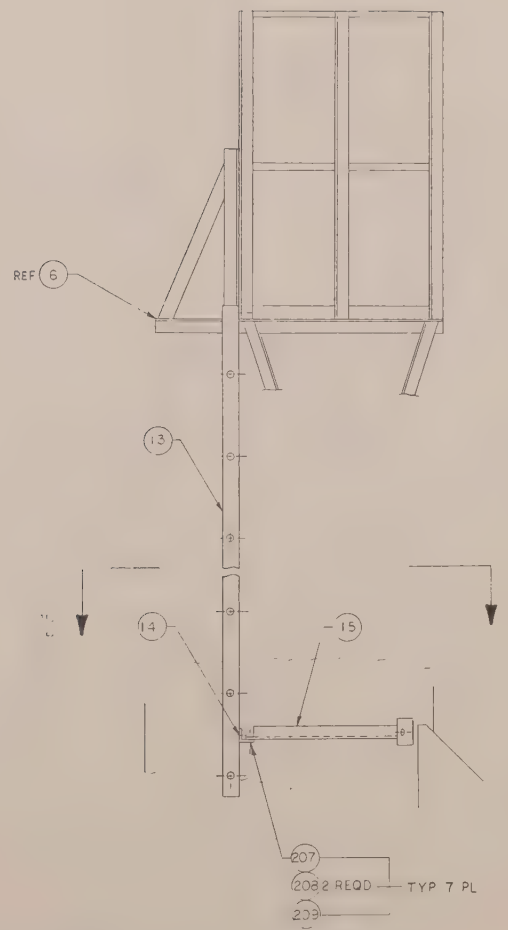


Figure 1-9. Mount Installation Assembly - Model 8020-120, 10/11-Meter Antenna Mount Systems, 359772 (Sheet 4 of 5)



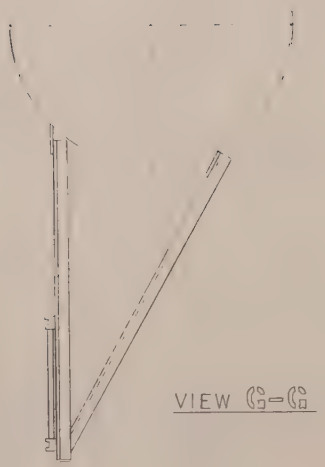


Figure 1-9. Mount Installation Assembly - Model 8020-120, 10/11-Meter Antenna Mount Systems, 359772 (Sheet 5 of 5)

NOTES:

⚠ SEE SHEET 2.

2. STL CD PL IS ABBREVIATION FOR STEEL CADMIUM PLATE.
3. GALV IS ABBREVIATION FOR GALVANIZED.

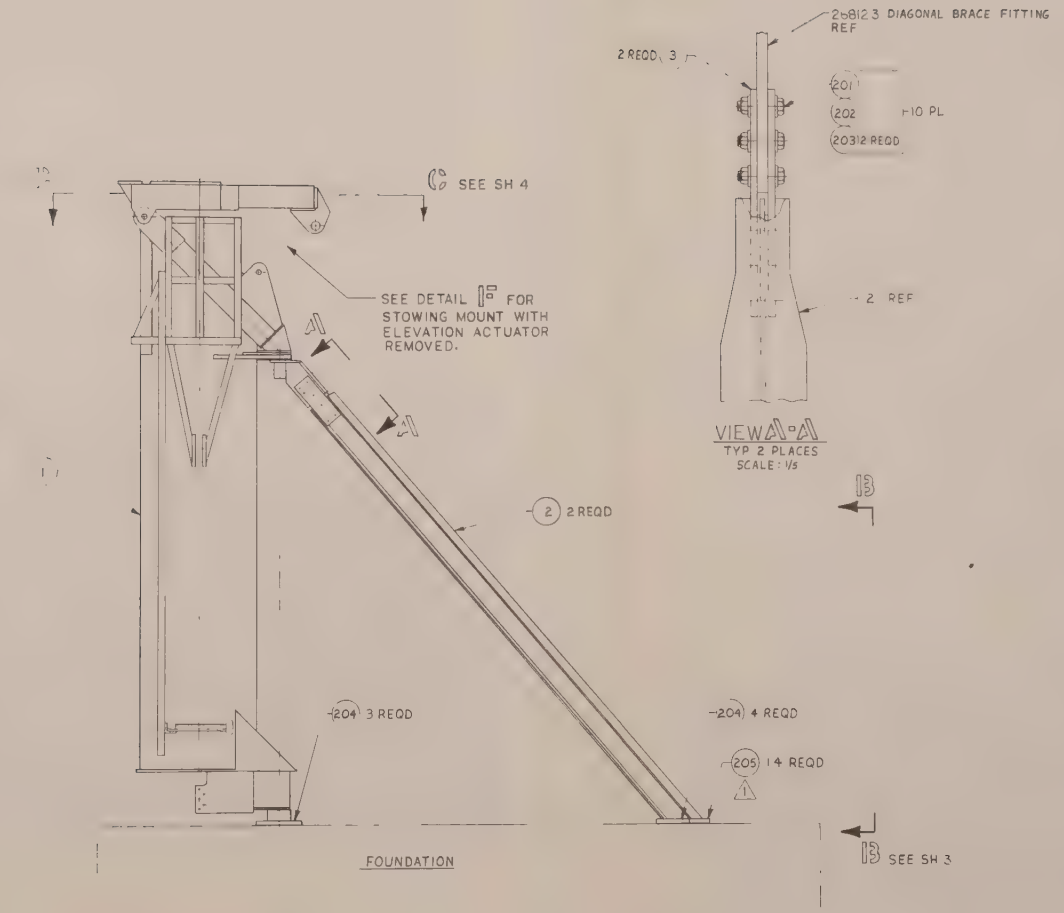
ITEM OR FIND NO	QTY REQD	S-A STOCK NO.	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FSCM NO.
213	4	86082	BOLT HEX HD	1.0-8 X 3.0 GALV		
212	4	73278	WASHER FLAT	1/4 ID STL CD PLD		
211	4	71508	NUT HEX	1/4-20 STL CD PLD		
210	4	72504	SCREW HEX HD	1/4-20 X 1 1/2 STL CD PLD		
209	26	72584	SCREW HEX HD	5/16-16 X 1 1/4 STL CD PLD		
208	60	73282	WASHER FLAT	5/16 ID STL CD PLD		
207	30	71513	NUT HEX	5/16-16 STL CD PLD		
206	4	75829	SCREW HEX HD	5/16-16 X 1 1/2 STL CD PLD		
205	14	170526	WASHER FLAT	1 1/4 ID GALV		
204	7	336686	SCREW SET SQ HD	3/4-10 X 3.0		
203	44	85844	WASHER FLAT	1.0 ID GALV		
202	24	85840	NUT HEX	1.0-8 GALV		
201	20	85836	BOLT HEX HD	1.0-8 X 4.0 GALV		

PARTS LIST

ITEM OR FIND NO	QTY REQD	S-A STOCK NO.	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FSCM NO.
16	4	339605	STOW BRACE			
15	1	268507	BRACE			
14	1	268506	BRACE			
13	1	268547	LADDER			
12	1	268424	RAIL			
11	1	268427	PLATFORM SUPPORT			
10	2	268426	SUPPORT RAIL			
9	1	268423	RAIL			
8	1	268439	SUPPORT			
7	1	268425	PLATFORM RAIL			
6	1	268422	PLATFORM BOTTOM			
5	1	339458	PLATFORM			
4	1	268609	SUPPORT BRACE			
3	4	268358	SPLICE PLATE			
2	2	268313	DIAGONAL BRACE			
1	1	339565	MOUNT STRUCTURE			

PARTS LIST

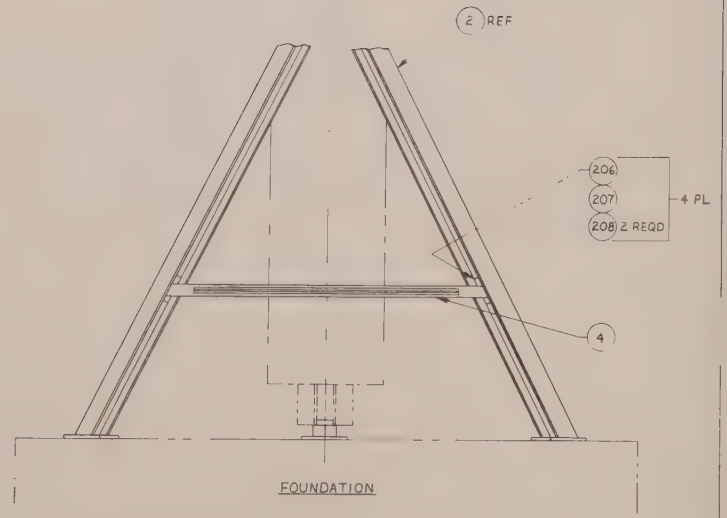
Figure 1-10. Mount Installation Assembly - Model 8020, 10/11-Meter Antenna Mount Systems, 268222 (Sheet 1 of 5)



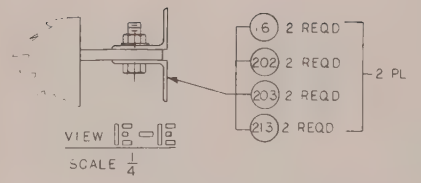
NOTE:

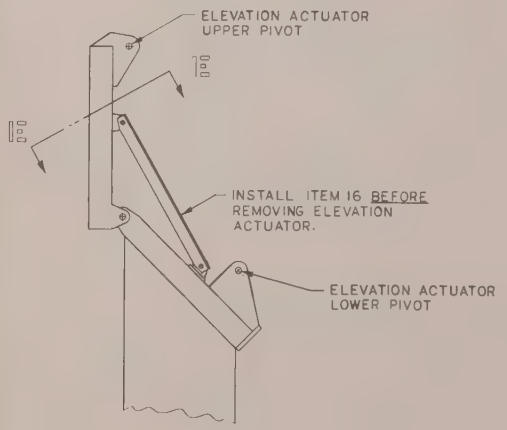
⚠1 ANCHOR BOLTS AND NUTS SUPPLIED IN FOUNDATION KIT.

Figure 1-10. Mount Installation Assembly - Model 8020, 10/11-Meter Antenna Mount Systems, 268222 (Sheet 2 of 5)



VIEW B-B





DETAIL F

ITEM 16 IS NOT REQUIRED FOR MOUNT INSTALLATION. IT IS USED ONLY WHEN THE ENTIRE ANTENNA HAS BEEN INSTALLED AND THE ELEVATION ACTUATOR MUST BE REMOVED.

Figure 1-10. Mount Installation Assembly - Model 8020, 10/11-Meter Antenna Mount Systems, 268222 (Sheet 3 of 5)

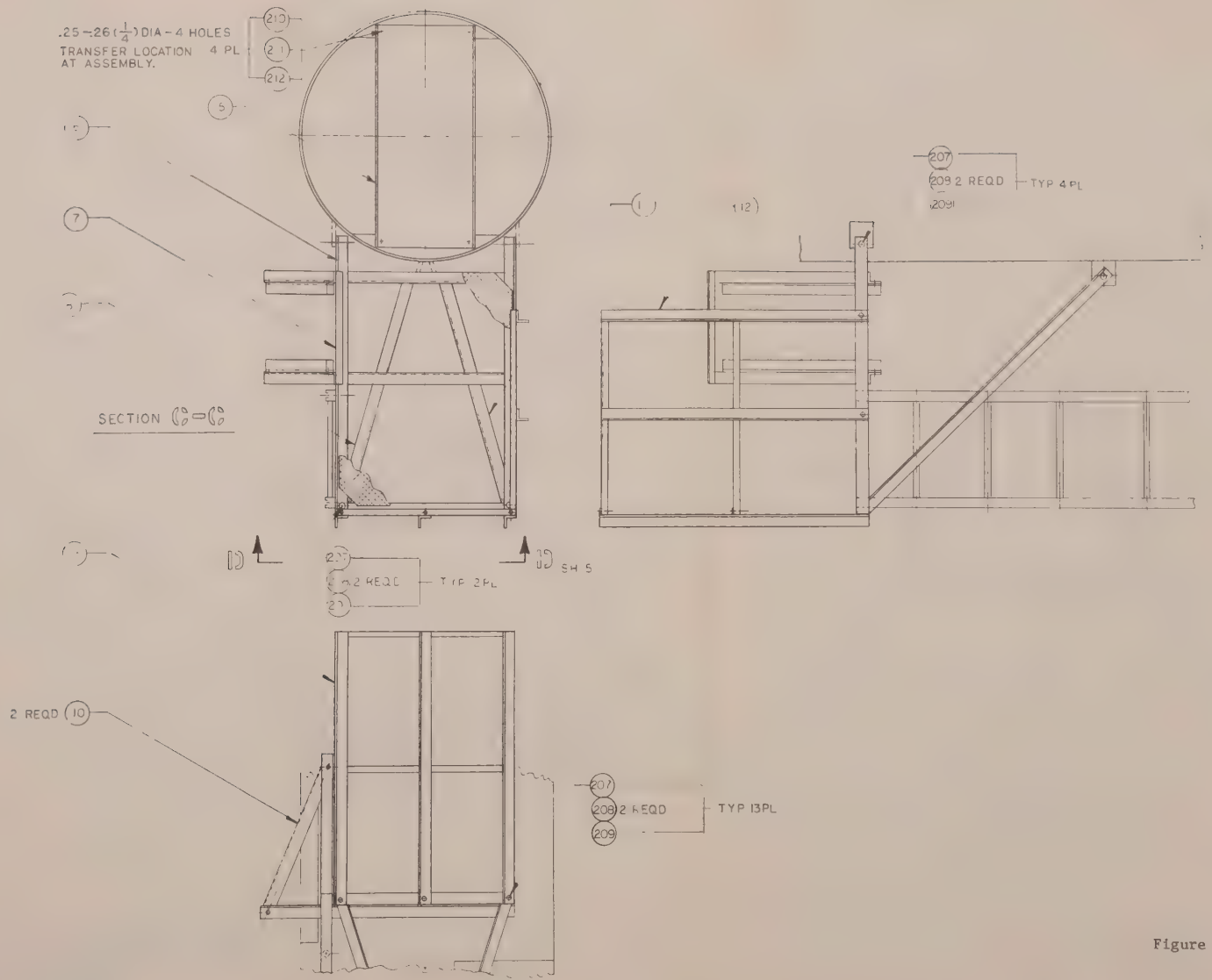


Figure 1-10. Mount Installation Assembly - Model 8020, 10/11-Meter Antenna Mount Systems, 268222 (Sheet 4 of 5)

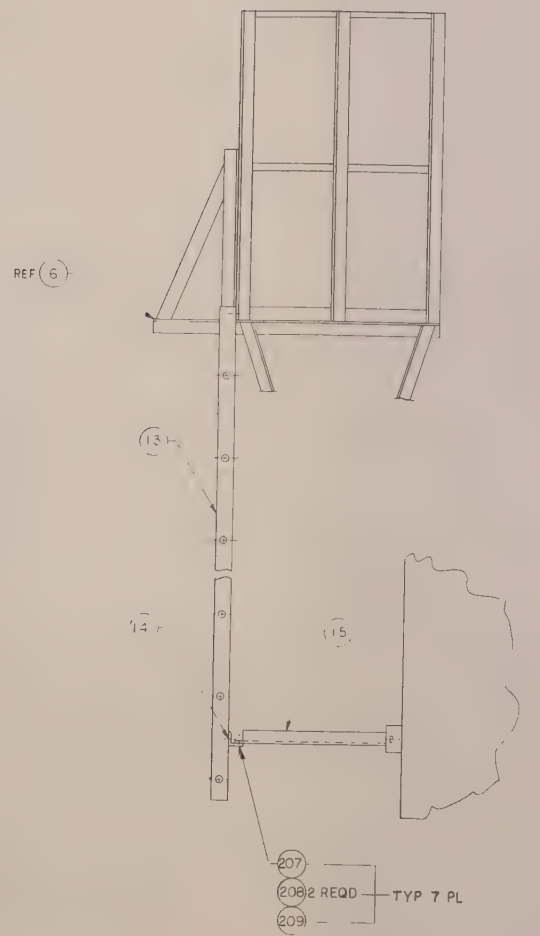
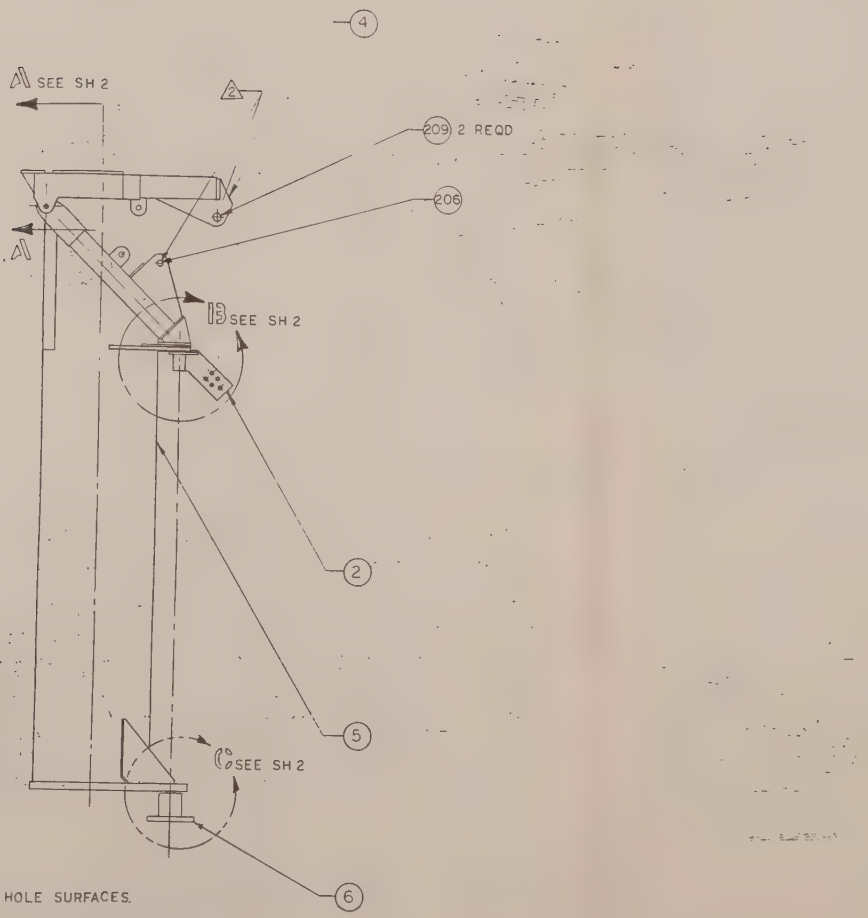


Figure 1-10. Mount Installation Assembly - Model 8020, 10/11-Meter Antenna Mount Systems, 268222 (Sheet 5 of 5)



NOTE:

1. SEE SHEET 2.
2. GREASE THESE INSIDE HOLE SURFACES. DO NOT PAINT.
3. DO NOT PAINT THE MASKED SURFACES ON ITEM 2.

ITEM OR FIG NO.	QTY REQD	A-1 STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO.	FROM NO.
209	2	336671	BEARING, SLEEVE	3.00 ID X 3.250 OD		
208	6	72567	SCREW, SET, HX SOC	3/8-16 X 3/8 STL CD PL		
207	2	336638	BEARING, SPHER	2.50 ID X 3.94 OD		
206	3	336637	BEARING, SPHER	1.50 ID X 2.44 OD		
205	3	268511	NUT	2 1/4-8 STL CD PL		
204	4	336690	PIN, COTTER	3/8 DIA X 3.0 LG SST		
203	4	88707	WASHER, FLAT	1 1/2 STL CD PL		
202	8	73296	WASHER, FLAT	1 IN. STL CD PL		
201	8	72751	SCREW, HEX HD	1-8 X 2 1/2 STL CD PL		
11	4	268411	SPACER			
10	2	268419	PIN			
9	2	268379	SPACER			
8	2	268378	SPACER			
7	1	268319	SHAFT			
6	1	359626	PIVOT, LOWER AZ			
5	1	359676	SUPPORT ASSY			
4	1	339339	A-FRAME ASSY			
3	2	268127	BEARING CAP			
2	1	268123	FITTING			
1	1	268122	SHAFT			

PARTS LIST

Figure 1-11. Mount Structure Assembly - Model 8020-120, 10/11-Meter Antenna Mount Systems, 359632 (Sheet 1 of 2)

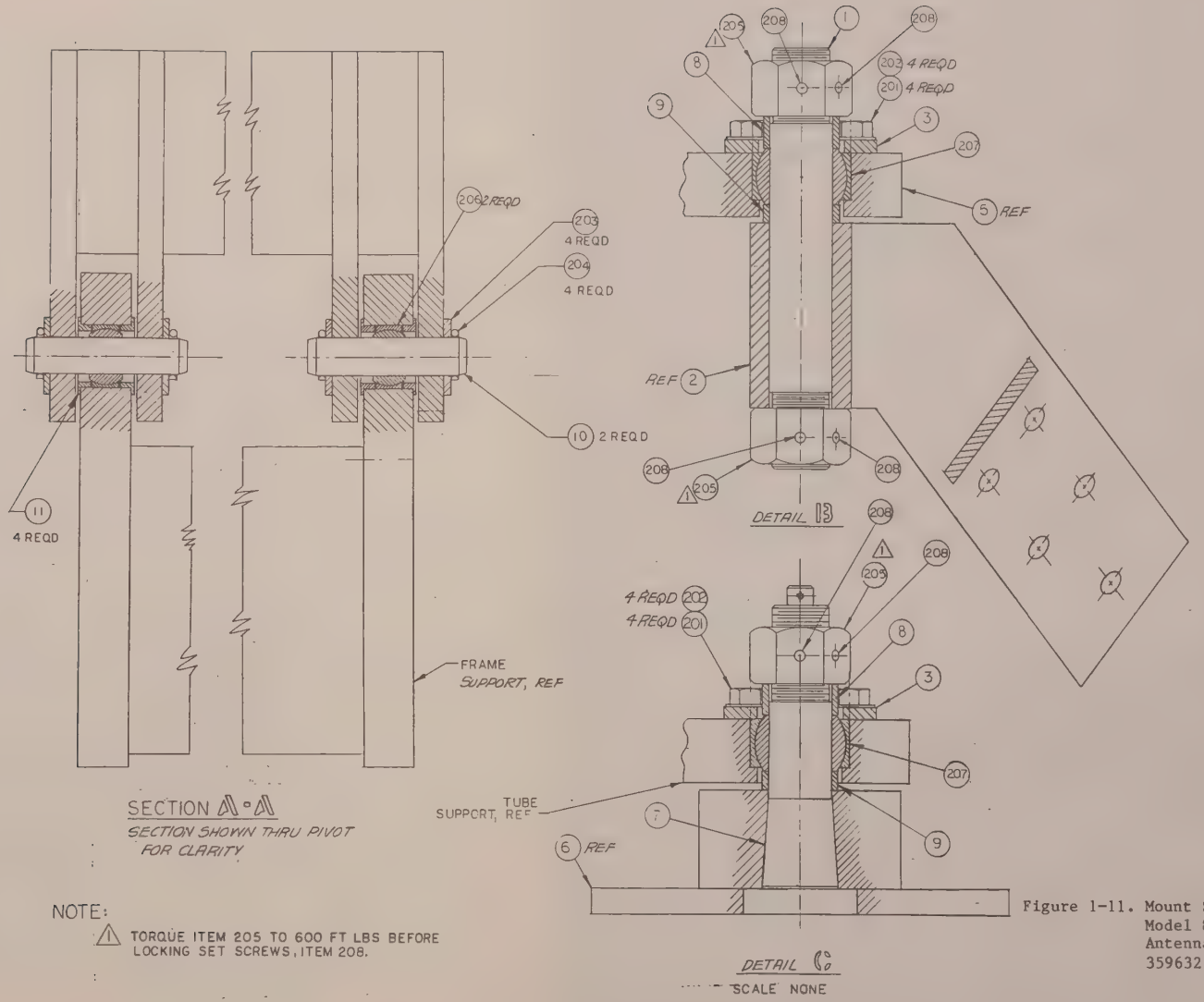
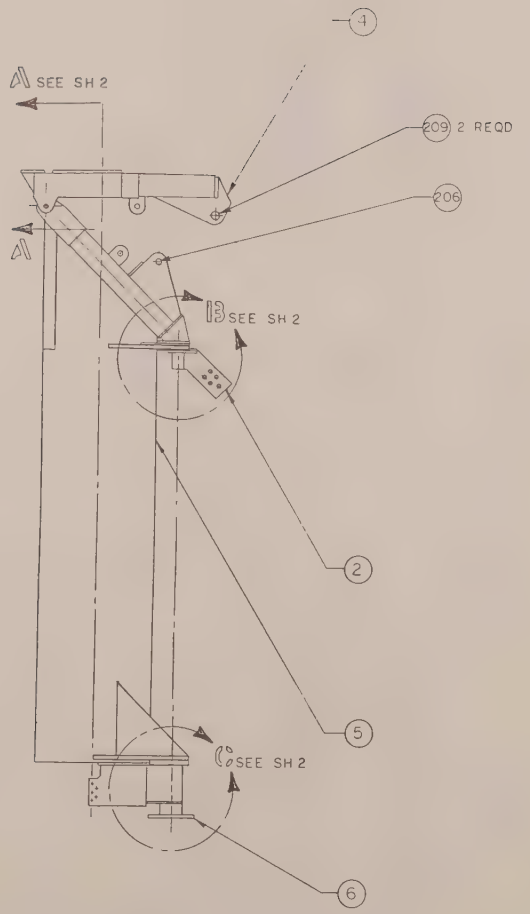


Figure 1-11. Mount Structure Assembly - Model 8020-120, 10/11-Meter Antenna Mount Systems, 359632 (Sheet 2 of 2)



NOTE:

1. SEE SHEET 2.

ITEM OR FIG NO.	QTY REQD	S-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO.	FSCM NO.
209	2	336671	BEARING, SLEEVE	3.00 ID X 3.250 OD		
208	6	72567	SCREW, SET, HX SOC	3/8-16 X 3/8 STL CD PL		
207	2	336638	BEARING, SPHER	2.50 ID X 3.94 OD		
206	3	336637	BEARING, SPHER	1.50 ID X 2.44 OD		
205	3	268511	NUT	2 1/4-8 STL CD PL		
204	4	336690	PIN, COTTER	3/8 DIA X 3.0 LG SST		
203	4	88707	WASHER, FLAT	1 1/2 STL CD PL		
202	8	73296	WASHER, FLAT	1 IN. STL CD PL		
201	8	72751	SCREW, HEX HD	1-8 X 2 1/4 STL CD PL		
11	4	268411	SPACER			
10	2	268419	PIN			
9	2	268379	SPACER			
8	2	268378	SPACER			
7	1	268319	SHAFT			
6	1	268318	PIVOT, LOWER AZ			
5	1	339441	SUPPORT ASSY			
4	1	339339	A-FRAME ASSY			
3	2	268127	BEARING CAP			
2	1	268123	FITTING			
1	1	268122	SHAFT			

PARTS LIST

Figure 1-12. Mount Structure Assembly - Model 8020, 10/11-Meter Antenna Mount Systems, 339565 (Sheet 1 of 2)

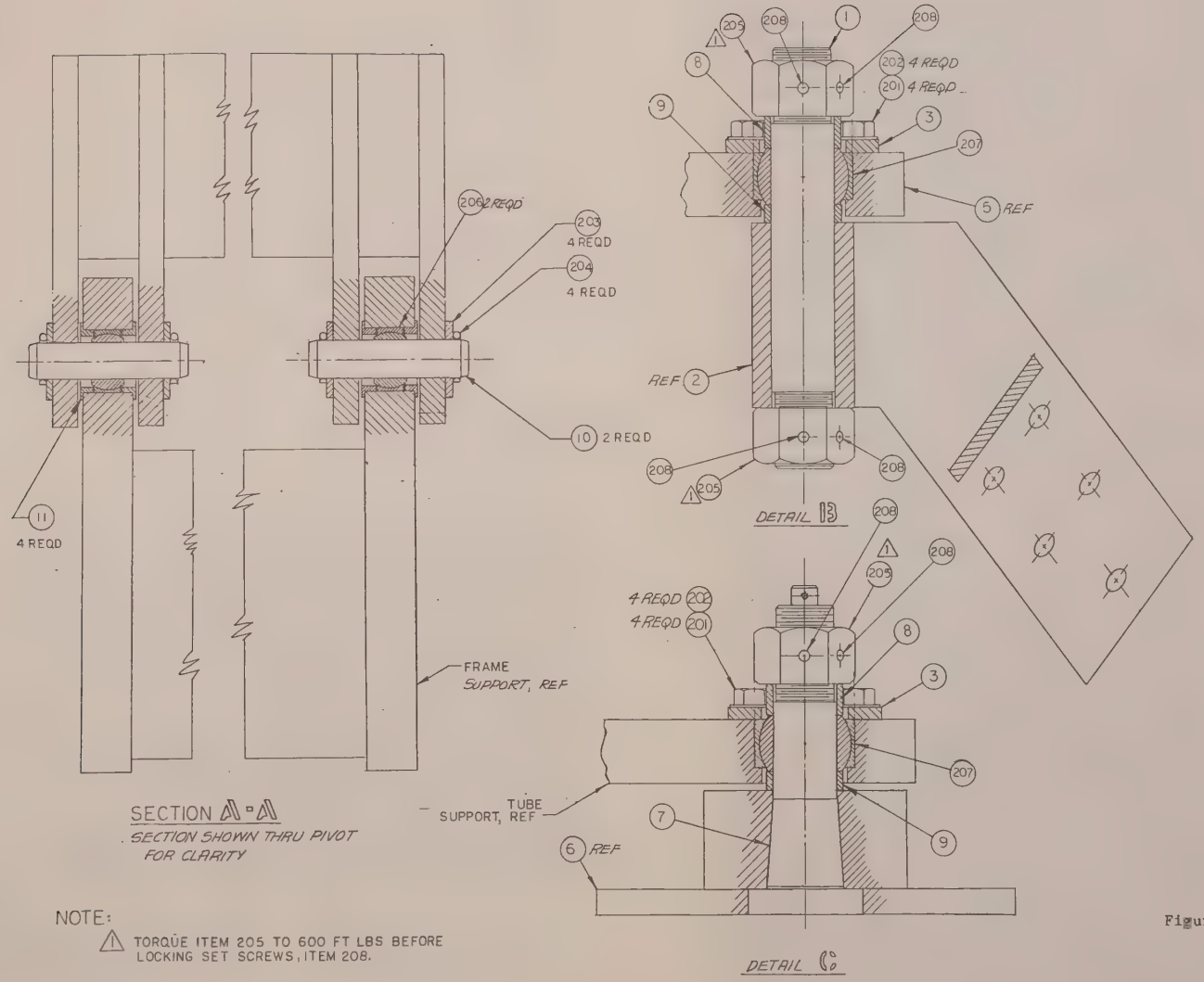
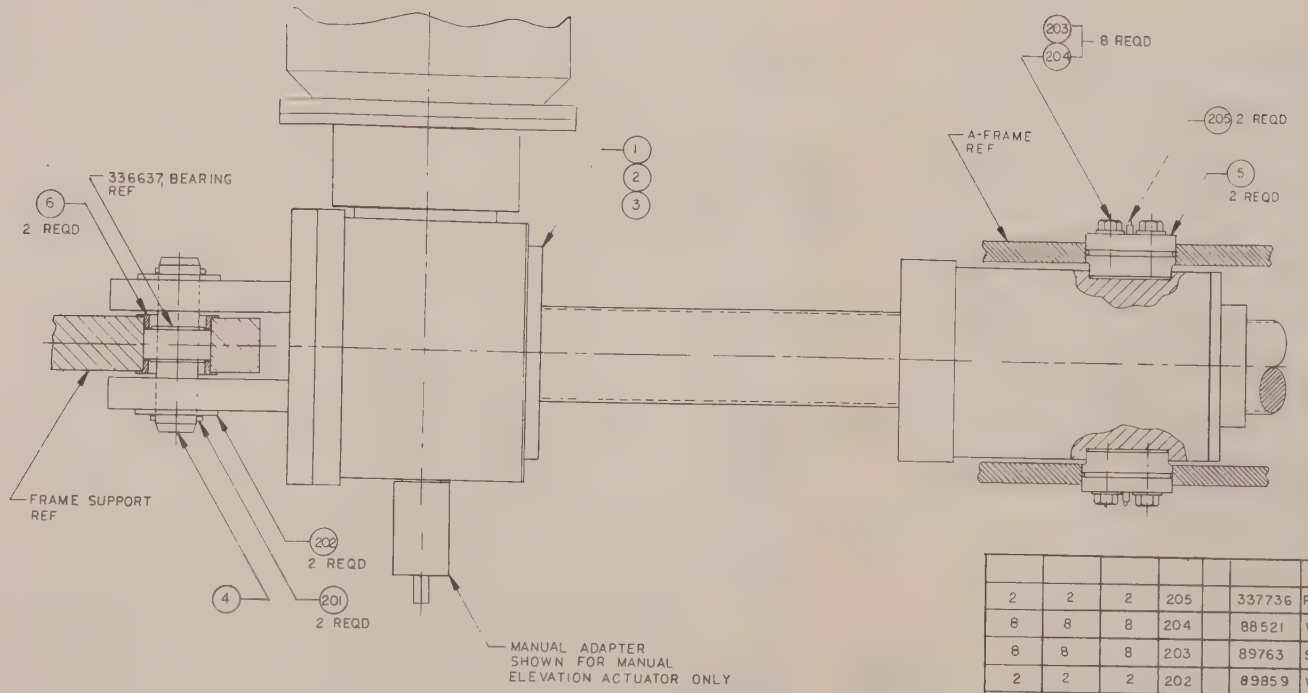


Figure 1-12. Mount Structure Assembly - Model 8020, 10/11-Meter Antenna Mount Systems, 339565 (Sheet 2 of 2)



VIEWED FROM REAR OF REFLECTOR
VIEW ROTATED 90° CLOCKWISE

2	2	2	205		337736	FITTING GREASE	90° 1/4-28UNF SST		
8	8	8	204		88521	WASHER FLAT	1/2 STL ZN PLD		
8	8	8	203		89763	SCREW, HEX HD	1/2-13 X 2 1/2 STL ZN PLD		
2	2	2	202		89859	WASHER, FLAT	1 1/2 STL ZN PLD		
2	2	2	201		336690	PIN, COTTER	3/8 DIA X 3.0 LG SST		
2	2	2	6		268411	SPACER			
2	2	2	5		339103	SHAFT, TRUNNION			
1	1	1	4		268419	PIN			
1	0	0	3		360060	EL ACTR ASSY BSJ			
0	1	0	2		359706	EL ACTR ASSY MTZ			
0	0	1	1		359703	EL ACTR ASSY MNL			
QTY REQD	QTY REQD	QTY REQD	ITEM OR FIND NO		P-A STOCK NO.	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	PRICE NO.
359764	359763	359762							
8132-2	8132-1	8132-M							

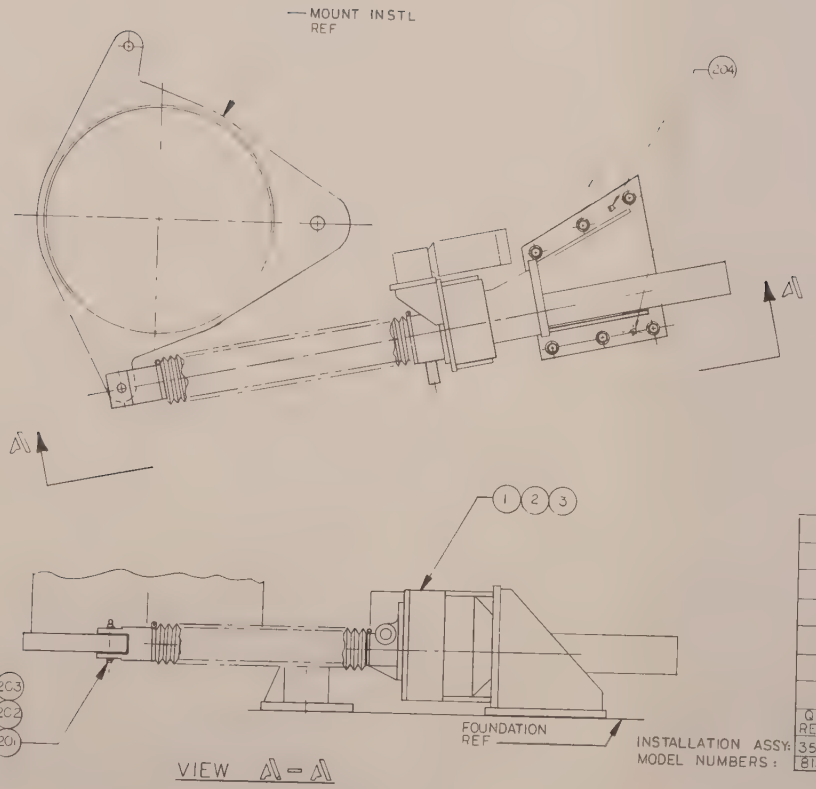
PARTS LIST

NOTE:

1. SST IS ABBREVIATION FOR STAINLESS STEEL.
   STL ZN PLD IS ABBREVIATION FOR STEEL ZINC PLATED.

2. DWG 359762 IS ELEVATION ACTUATOR INSTALLATION ASSEMBLY, MANUAL.
   DWG 359763 IS ELEVATION ACTUATOR INSTALLATION ASSEMBLY, SINGLE SPEED MOTORIZED
   DWG 359764 IS ELEVATION ACTUATOR INSTALLATION ASSEMBLY, DUAL SPEED MOTORIZED

Figure 1-13. Elevation Actuator Installation - Models 8132-M, 8133-1, and 8133-2, 10/11-Meter Antenna Mount Systems, 359762-359767



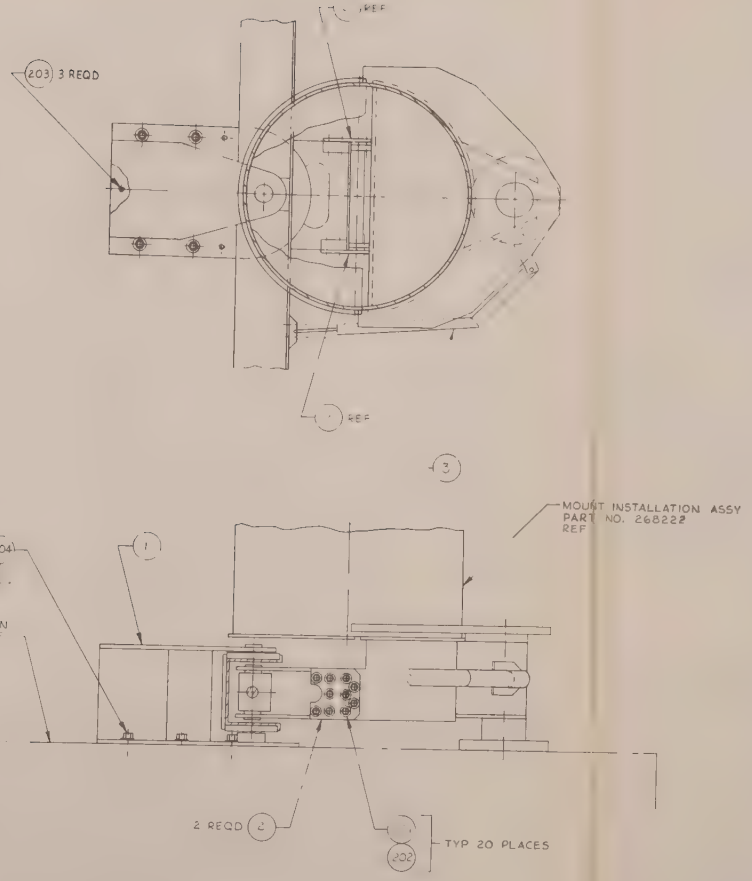
NOTE:
⚠1 ANCHOR BOLTS, NUTS, AND WASHERS SUPPLIED IN FOUNDATION KIT.

INSTALLATION ASSY: 359754 359753 359752
MODEL NUMBERS: 8133-2 8133-1 8133-M

QTY REQD	QTY REQD	QTY REQD	ITEM OR FIND NO		DA STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FROM NO.
2	2	2	204		336686	SET SCREW			
1	1	1	203		173820	GREASE FITTING			
2	2	2	202		173822	RETAINING RING			
1	1	1	201		359635	PIN			
1	0	0	3		360164	AZ ACTR SUBASSY	DUAL SPEED MOTORIZED		
0	1	0	2		359655	AZ ACTR SUBASSY	SINGLE SPEED MOTORIZED		
0	0	1	1		359707	AZ ACTR SUBASSY	MANUAL DRIVE		

PARTS LIST

Figure 1-14. Azimuth Actuator Installation - Models 8133-M, 8133-1, and 8133-2, 10/11-Meter Antenna Mount Systems, 359752-359757



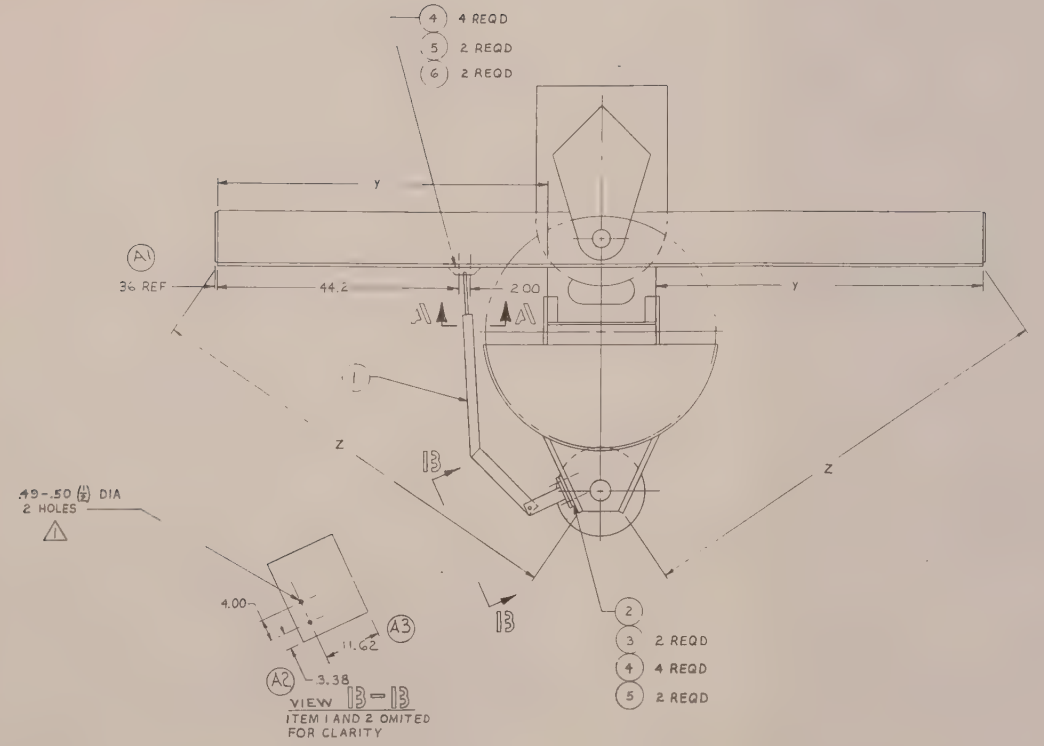
NOTE:

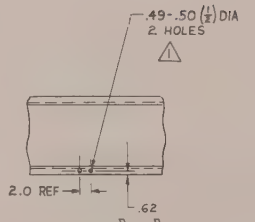
⚠1 ANCHOR BOLTS AND NUTS SUPPLIED IN FOUNDATION KIT.

ITEM OR FIND NO	QTY REQD	GA STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FSCM NO
204	6	170526	WASHER, FLAT	1 1/4 GALV		
203	3	336686	SCREW, SET, SQ HD	3/4-10 x 30		
202	20	88538	WASHER, FLAT	1 N H STL CI.		PLD
201	20	88529	SCREW, HEX HD	1-8 x 2 3/4 STL CI.		PLD
3	1	268986	CENTERING LINK			
2	2	268542	SPLICE PLATE			
1	1	339602	AZIMUTH A TR ASSY			

PARTS LIST

Figure 1-15. Azimuth Actuator Installation - Model 8133, 10/11-Meter Antenna Mount Systems, 268192





NOTES:

1. LAYOUT AND DRILL FOUR (½) DIA HOLES.
2. REMOVE ROLLERS AND BARS FROM AZIMUTH FRAME.
3. LINK INSTALLATION PROCEDURE:
   A) OPERATE ACTUATOR TO POSITION MOUNT AT CENTER, AS DETERMINED BY THE DIMENSION "Y" FROM FRAME END TO EDGE OF PIVOT STRUCTURE. DIMENSION "Y" ON THE TWO SIDES TO BE EQUAL WITHIN .06 INCH.
   B) ROTATE THE FRAME ABOUT THE CENTER PIVOT AS REQUIRED TO REACH THE SYMMETRICAL POSITION INDICATED BY DIMENSION "Z" BEING THE SAME ON THE TWO SIDES WITHIN .06 INCH.
   C) HOLD FRAME IN THE SYMMETRICAL POSITION OF STEP B AND INSTALL THE CENTERING LINK AS SHOWN. ADJUST THE ROD END BEARING AS REQUIRED TO MAKE END CONNECTIONS. CONNECTIONS MUST BE MADE WITH LINK IN ITS FREE LENGTH, NEITHER EXTENDED OR RETRACTED AGAINST ITS INTERNAL SPRINGS.
   D) LOCK SET SCREW AT ROD END TO PREVENT MOVEMENT.
4. ROTATE MOUNT IN BOTH DIRECTIONS AND WATCH FOR INTERFERENCE OR BINDING.

ITEM OR FIND NO	QTY REQD	D-6 STOCK NO.	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FSCM NO
6	2	88514	SCREW, HEX HD	⅜-16 X 1.0 STEEL ZINC PLATED		
5	4	89739	NUT, HEX	⅜-16 STEEL ZINC PLATED		
4	8	88520	WASHER, FLAT	⅜ STEEL ZINC PLATED		
3	2	1170617	SCREW, HEX HD	⅜-16 X 2.5 STEEL ZINC PLATED		
2	1	268969	SPACER			
1	1	268795	CENTERING LINK			

PARTS LIST

Figure 1-16. Centering Link - Model 8133 Azimuth Actuator, 10/11-Meter Antenna Mount Systems, 268986

NOTE:

1. STL ZN PLD IS ABBREVIATION FOR STEEL ZINC PLATED.
2. THRU 7. SEE SH 2.
8. COMPLETE OPERATION CHECK OF ELECTRICAL AND MECANICAL PARTS PRIOR TO FINAL PAINT FINISH IS REQUIRED.
9. , 10. , 11. SEE SH 2

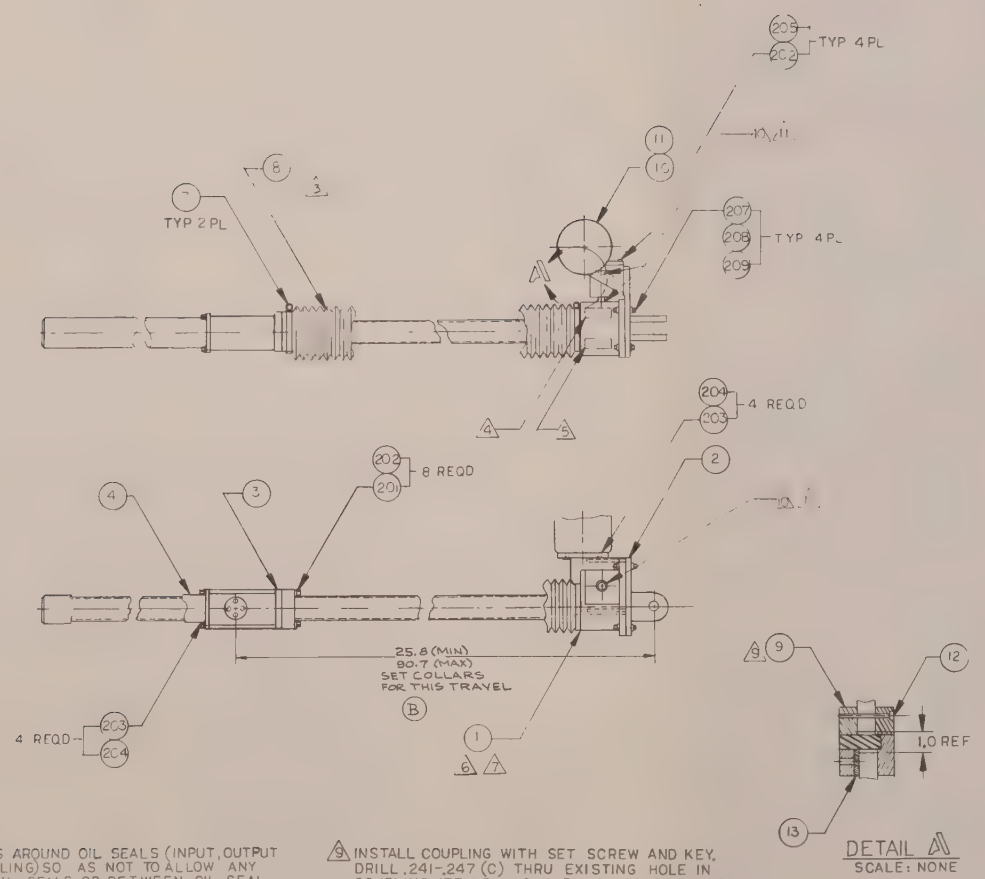
ITEM OR FIND NO.	QTY REQD	D-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FSCM NO
211	AR	79054	LUBRICANT GREASE			
210						
209	4	89778	WASHER FLAT	$1\frac{1}{4}$ STL ZN PLD		
208	4	173862	SCREW, HEX HD	$1\frac{1}{4}$-7 x $3\frac{1}{2}$ STL ZN PLD		
207	4	173825	NUT, HEX	$1\frac{1}{4}$-7 STL ZN PLD		
206						
205	4	88516	SCREW HEX HD	$\frac{1}{2}$-13 x $1\frac{3}{4}$ STL ZN PLD		
204	8	88520	WASHER, FLAT	$\frac{1}{2}$ STL ZN PLD		
203	8	89761	SCREW, HEX HD	$\frac{1}{2}$-13 x $\frac{3}{4}$ STL ZN PLD		
202	12	88521	WASHER FLAT	$\frac{1}{2}$ STL ZN PLD		
201	8	89764	SCREW, HEX HD	$\frac{1}{2}$-13 x $2\frac{3}{4}$ STL ZN PLD		

PARTS LIST

ITEM OR FIND NO.	QTY REQD	D-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FSCM NO.
13	1	22853	KEY			
12	1	158945	SHEAR PIN			
11	1	215441	MOTOR 2 HP			
10	1	215443	REDUCER 20:1			
9	1	158944	COUPLING			
8	1	337863	BOOT			
7	2	173824	CLAMP, HOSE			
6						
5						
4	1	364325	SLEEVE, PROTECTION			
3	1	359639	TRUNNION			
2	1	360201	BRACKET			
1	1	337862	JACK, MACHINE SCREW			

PARTS LIST

Figure 1-17. Elevation Actuator Assembly - Model 8132-1, 10/11-Meter Antenna Mount Systems, 359706 (Sheet 1 of 2)



NOTE:

2. DO NOT PAINT BOOT COMPONENT INFORMATION DECALS NAMEPLATES, PINBORE INDICATED GREASE FITTINGS OR SHAFT OIL AND GREASE SEALS.
3. BEFORE INSTALLING BOOT PUNCH .18-.25 DIA HOLES IN BOOT FOR DRAINING. DO NOT PUNCH THRU STICHING. PUNCH EVERY OTHER CONVOLUTION. ROTATE BOOT SO THAT TABS ARE IN HORIZONTAL ℄ WITH JACK SCREW.
4. APPLY MODEL SERIAL NUMBER PLATE HERE.
5. STAMP ASSEMBLY NUMBER 359706 C HERE.
6. INSURE THAT JACK HOUSING IS FILLED WITH LOW TEMPERATURE GREASE, ITEM 211 OR EQUIVALENT.
7. COAT JACK SCREW THREADS WITH GREASE, ITEM 211.

10. MASK AREAS AROUND OIL SEALS (INPUT, OUTPUT SHAFT, COUPLING) SO AS NOT TO ALLOW ANY PAINT ON OIL SEALS OR BETWEEN OIL SEAL AND SHAFT DIAMETER.
11. APPLY 1/8 INCH FILLET OF GREASE, ITEM 211, AROUND INPUT, OUTPUT SHAFT AND OIL SEALS AFTER PAINTING.
9. INSTALL COUPLING WITH SET SCREW AND KEY. DRILL .241-.247 (C) THRU EXISTING HOLE IN COUPLING ITEM 9 AND THRU SHAFT OF REDUCER, ITEM 10. REAM .2495-.2500 HOLE 2.5 INCH DEPTH. INSTALL ITEM 12 SHEAR PIN, BEING SURE THAT THE HEAD SEATS ON THE C'BORE SURFACE. HEAD OF PIN ITEM 12 TO BE IMPRESSION STAMPED WITH LETTER 'A'. SHEAR PIN DIA .250

Figure 1-17. Elevation Actuator Assembly - Model 8132-1, 10/11-Meter Antenna Mount Systems, 359706 (Sheet 2 of 2)

218	2	70212	BEARING, FLAT	$1\frac{9}{16}$ ID $2\frac{7}{16}$ OD $\frac{1}{8}$ THK	SINTERED BRONZE	
217	4	170541	WASHER, FLAT	$1\frac{1}{4}$ STL ZN PLD		
216	4	73825	NUT, HEX	$1\frac{1}{4}$-7 STL ZN PLD		
215	4	173862	SCREW, HEX HD	$1\frac{1}{4}$-7 X $3\frac{1}{2}$ STL ZN	PLD	
214	2	72526	SCREW SET	$\frac{5}{16}$-18 X $\frac{5}{8}$ STL CD	PLD	
213	1	86488	CONDUIT FITTING			
212	AR	79054	LUBRICANT GREASE			
211	3	171018	JT HEX SELF LCKNG	1/4-20 UNC 2B		
210	4	173822	RING, RETAINER			
209	2	173820	GREASE FITTING	90°		
208		173826	PIN SOLID GROOVE	INCH D A		
207	3	78503	BOLT EYE W/SHLDR	5/16-10 THD 2 IN		
206	2	86161	CLAMP, BOOT			
205	4	88518	NUT, HEX	1/2-13 STL ZN PLD		
204	8	88521	WASHER, FLAT	1/2 STL ZN PLD		
203	4	88527	SCREW, HEX HD	1/2-13 X 2 STL ZN PLD		
202	4	88520	WASHER, FLAT	1/2 STL ZN PLD		
201	4	89765	SCREW, HEX HD	5/16-18 X 3/4 STL ZN PLD		

PARTS LIST

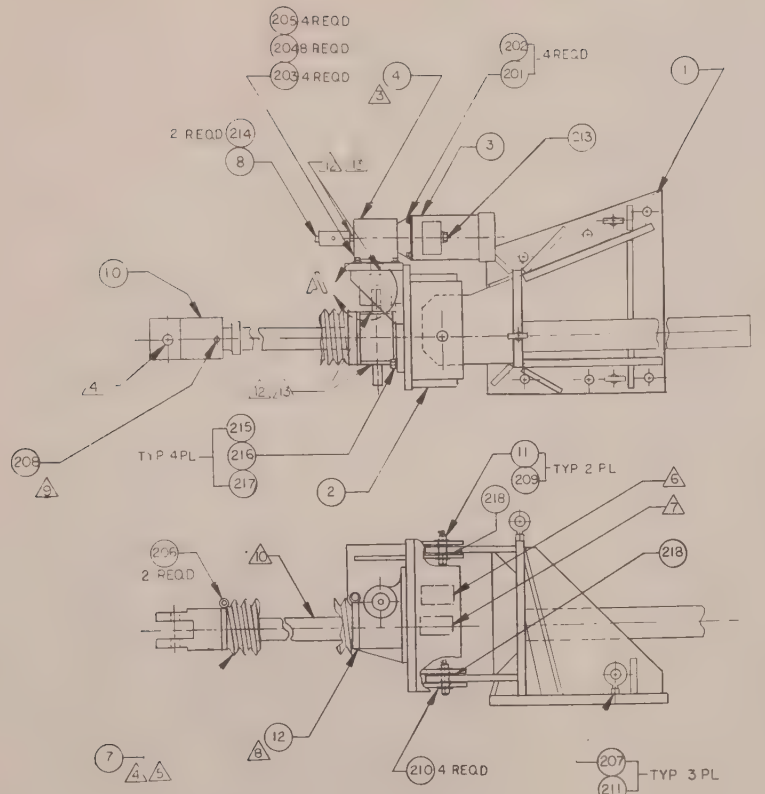
NOTE:

1. ⚠1 STL ZN PLD IS ABBREVIATION FOR STEEL ZINC PLATED.
   STL CD PLD IS ABBREVIATION FOR STEEL CADMIUM PLATED.
2. ⚠2 THRU ⚠10 SEE SHEET 2.
3. COMPLETE OPERATIONAL CHECK OF ELECTRICAL AND MECHANICAL PARTS PRIOR TO FINAL PAINT FINISH IS REQUIRED.
4. ⚠12, ⚠13 SEE SH 2

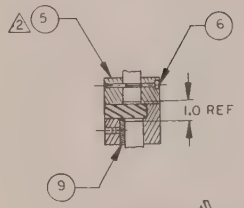
12	1	359648	JACK, 30 TON, MACHINE SCREW			
11	2	359636	PIN			
10	1	359627	CLEVIS, JACK			
9	1	212853	KEY			
8	1	157230	ADAPTER, SHAFT			
7	1	337865	BOOT			
6	1	158945	SHEAR PIN			
5	1	158944	COUPLING			
4	1	215443	REDUCER 20:1			
3	1	215441	MOTOR 2HP			
2	1	359628	BRACKET, AZ ACTR			
1	1	359943	ANCHOR AZ ACTR			

PARTS LIST

Figure 1-18. Azimuth Actuator Assembly - Model 8133-1, 10/11-Meter Antenna Mount Systems, 359665 (Sheet 1 of 2)



STOP COLLAR SETTING, JACK RETRACTED
SCALE: NONE



DETAIL A
SCALE: NONE

NOTE:

2. INSTALL COUPLING WITH SET SCREW AND KEY. DRILL .241-.247 (C) THRU EXISTING HOLE IN COUPLING ITEM 5 AND THRU SHAFT OF REDUCER, ITEM 4. REAM .2495-.2500 HOLE 2.5 MIN DEPTH. INSTALL ITEM 6 SHEAR PIN, BEING SURE THAT THE HEAD SEATS ON THE C'BORE SURFACE. HEAD OF PIN ITEM 6 TO BE IMPRESSION STAMPED WITH LETTER 'A'. SHEAR DIA .250

3. CHECK FOR PROPER LUBRICANT LEVEL OF ITEM 4 REDUCER AND ADD LUBRICANT IF NECESSARY. PLACE VENT PLUG IN PLASTIC BAG AND WIRE TO REDUCER FOR SHIPMENT.

4. DO NOT PAINT BOOT, COMPONENT INFORMATION DECALS, NAMEPLATES, PIN BORE INDICATED, GREASE FITTINGS, OR SHAFT OIL AND GREASE SEALS.

5. BEFORE INSTALLING BOOT PUNCH .18-.25 DIA HOLES IN BOTTOM OF BOOT FOR DRAINING. DO NOT PUNCH THRU STICHING. PUNCH EVERY OTHER CONVOLUTION. ROTATE BOOT SO THAT TABS ARE ON HORIZONTAL ℄ WITH JACK SCREW.

6. APPLY MODEL SERIAL NUMBER PLATE HERE.

7. STAMP ASSEMBLY NUMBER 359665 CHERE.

8. INSURE THAT JACK HOUSING IS FILLED WITH LOW TEMPERATURE GREASE ITEM 212 OR EQUIVALENT.

9. APPLY 300 LB-FT OF LOCKING TORQUE TO ITEM 10 WHILE HOLDING THE JACK SCREW FIXED. THEN DRILL AND INSTALL ITEM 208, PIN.

10. COAT JACK SCREW THREADS WITH GREASE ITEM 212.

12. MASK AREAS AROUND OIL SEALS (INPUT, OUTPUT SHAFTS) SO AS NOT ALLOW ANY PAINT ON OIL SEALS OR BETWEEN OIL SEAL AND SHAFT DIAMETER.

13. APPLY 1/8 FILLET OF GREASE, ITEM 212, AROUND INPUT, OUTPUT SHAFT OIL SEALS AFTER PAINTING

Figure 1-18. Azimuth Actuator Assembly - Model 8133-1, 10/11-Meter Antenna Mount Systems, 359665 (Sheet 2 of 2)

ITEM OR FIND NO	QTY REQD	S-A STOCK NO.	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FSCM NO
250	AR	74412	LUBRICANT			
249	AR	85337	ADHESIVE			

PARTS LIST

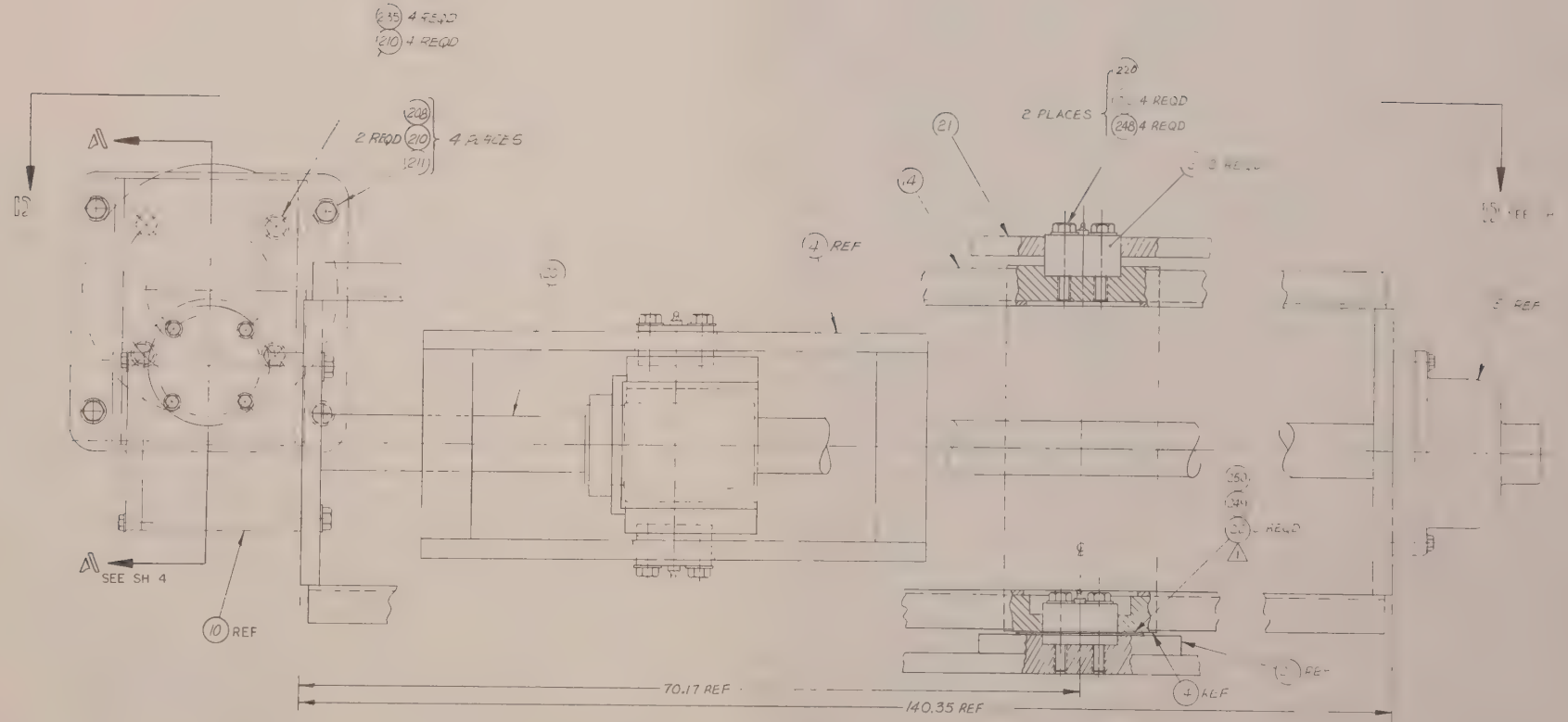
ITEM OR FIND NO	QTY REQD	S-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FSCM NO
248	8	72661	SCREW, HEX HD	$\frac{1}{2}$-13 x $2\frac{3}{4}$ STL	CD PL	
247	AR	66776	KEY, STL BAR, SQ	$\frac{3}{8}$ SQ		
246	4	72524	SCREW, SET	$\frac{5}{16}$-18 X $\frac{5}{16}$ STL	CD PL	
245	AR	66385	KEY, STL BAR, SQ	$\frac{1}{4}$ SQ		
244						
243						
242						
241						
240	2	337758	SHIM LAMINATED	4.90 OD 3.601D		
239						
238						
237						
236	2	337757	SHIM LAMINATED	4.75 OD 3.50 ID		
235	1	72450	SCREW, HEX HD	$\frac{1}{2}$-13 X $1\frac{1}{4}$ STL	CD PL	
234	1	73258	LOCKWASHER	W-08		
233	1	71479	LOCKNUT	N-08		
232	13	73278	WASHER, FLAT	$\frac{1}{4}$ STL CD PL		
231	13	72493	SCREW, HEX HD	$\frac{1}{4}$-20 x $\frac{3}{4}$ STL	CD PL	
230						
229						
228	2	70156	BEARING, BALL	.0001 x .2500 OD	KP16A	FB
227	2	70158	BEARING BALL	2938 D x 3.935 OD	KP41B	FB
226	2	330961	BEARING CONE	1.1250 ID	4.126	TR
225	2	330960	BEARING CUP	2.8593 OD	4.286	TR
224	AR	66728	KEY, STL BAR, SQ	$\frac{3}{16}$ SQ		
223						
222						
221						
220	4	337736	GREASE FITTING			
219	10	73280	WASHER, FLAT	$\frac{5}{16}$ STL CD PL		
218	10	72541	SCREW, HEX HD	$\frac{5}{16}$-18 x 1 STL	CD PL	
217	8	337741	SCREW, SET, HALF-DOG	$\frac{3}{8}$-16 x $\frac{1}{2}$ BLK OXD		
216						
215	16	73282	WASHER, FLAT	$\frac{3}{8}$ STL CD PL		
214	8	72579	SCREW, HEX HD	$\frac{3}{8}$-16 x 1 STL	CD PL	
213	8	72584	SCREW, HEX HD	$\frac{3}{8}$-16 x $1\frac{1}{4}$ STL	CD PL	
212						
211	4	71518	NUT, HEX	$\frac{1}{2}$-13 STL CD PL		
210	36	73286	WASHER, FLAT	$\frac{1}{2}$ STL CD PL		
209	4	72651	SCREW, HEX HD	$\frac{1}{2}$-13 x $1\frac{1}{2}$ STL	CD PL	
208	8	72653	SCREW, HEX HD	$\frac{1}{2}$-13 x $1\frac{3}{4}$ STL	CD PL	
207	8	72659	SCREW, HEX HD	$\frac{1}{2}$-13 x $2\frac{1}{2}$ STL	CD PL	
206	1	336644	GEAR	32 TOOTH		
205	1	336643	GEAR	28 TOOTH		
204	1	337725	MOTOR			
203	2	330010	BEARING, THRUST	3.50 D x 5.22 OD	NTHA 5684	TOG
202	1	330050	SEAL, SHAFT	1.06 DX 2.00 OD	63 x 733	GA
201	AR	72972	TAPE, SPRING	$\frac{1}{8}$ THK X $\frac{3}{4}$ WIDE		

PARTS LIST

ITEM OR FIND NO	QTY REQD	S-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FSCM NO
23	4	268434	BUMPER			
22	2	268541	SPACER			
21	1	339274	ACTUATOR ANCHOR			
20	1	336613	BALL SCREW AND NUT ASSY			
9	1	268373	COVER			
18	1	268401	CAP, BEARING			
7		268421	PLATE, MOTOR MTG			
16	1	268417	HOUSING, RUX GEAR			
15						
14	1	268405	FRAME			
13	1	268404	TRUNNION NUT			
12	1	268401	COVER, TRUNNION			
11	1	268400	TRUNNION			
10	1	268372	HOUSING, ACTR, AZ			
9	1	268353	SHAFT, OUTPUT			
8	1	268396	SHAFT			
7	1	268345	THRUST COLLAR			
6	1	268344	PLATE			
5	1	268343	COVER			
4	1	268206	PIVOT STRUCTURE			
3	4	339103	TRUNNION SHAFT			
2	1	268166	WORM AND GEAR SET			
1		268342	END CAP			

PARTS LIST

Figure 1-19. Azimuth Actuator Assembly - Model 8133, 10/11-Meter Antenna Mount Systems, 339602 (Sheet 1 of 5)



NOTE:
⚠ BOND ONE SPACER, ITEM 22, TO BOTTOM OF FRAME, ITEM 14, AND OTHER SPACER TO TOP OF ANCHOR, ITEM 21, WITH ADHESIVE, ITEM 249. PLACE LUBRICANT, ITEM 250, BETWEEN INTERFACE OF SPACERS, ITEMS 22.

Figure 1-19. Azimuth Actuator Assembly - Model 8133, 10/11-Meter Antenna Mount Systems, 339602 (Sheet 2 of 5)

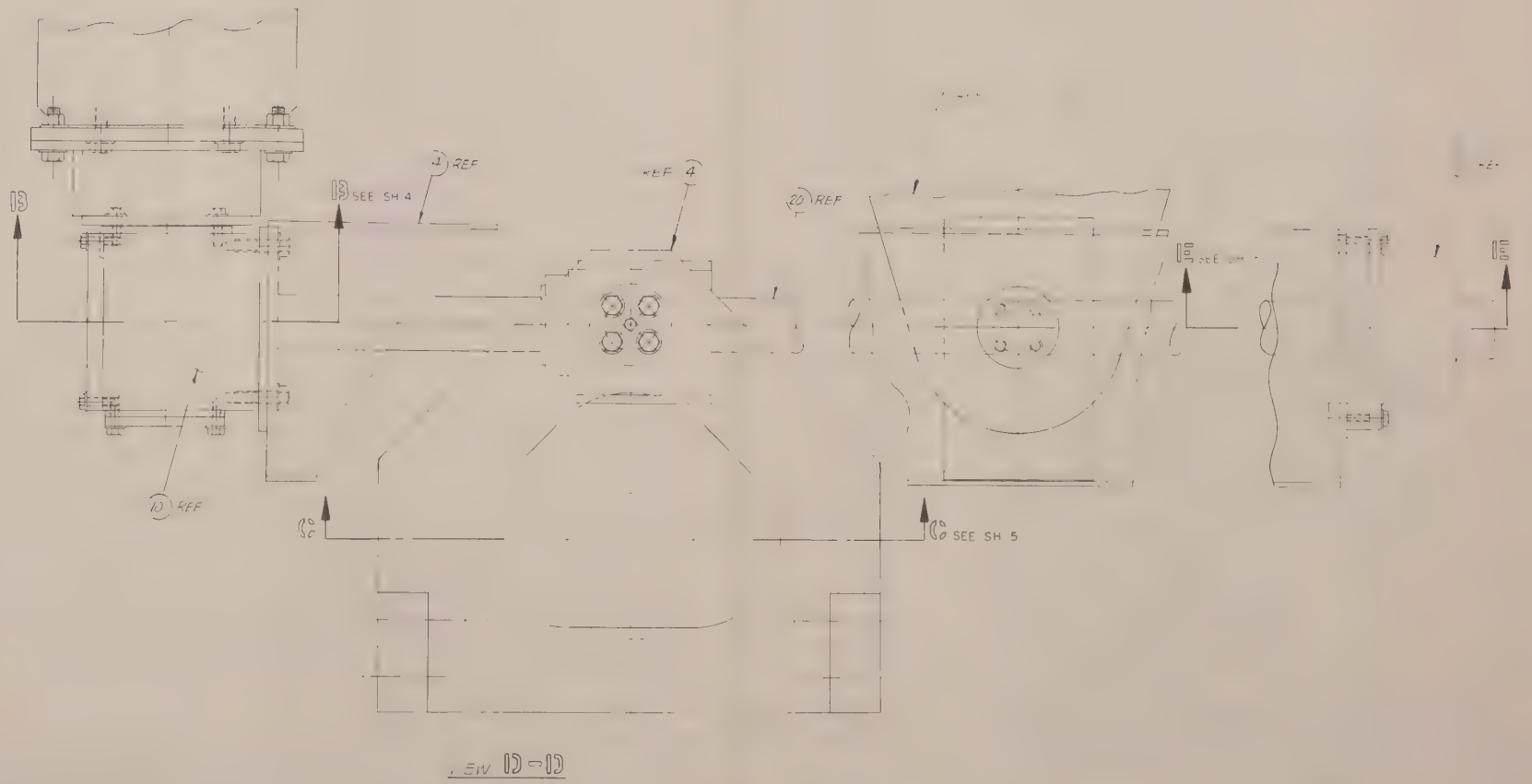
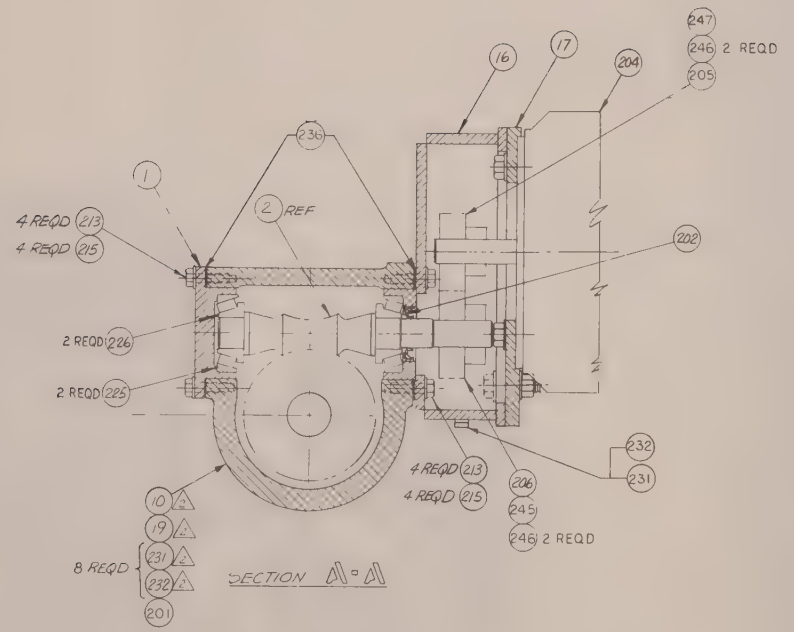
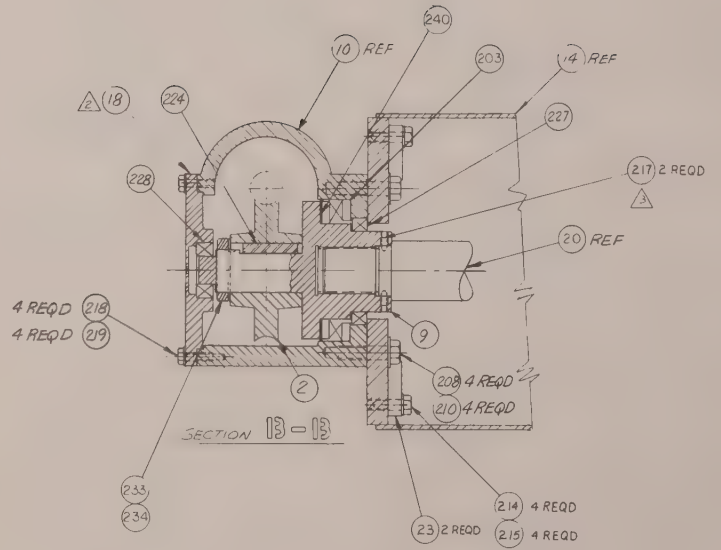


Figure 1-19. Azimuth Actuator Assembly - Model 8133, 10/11-Meter Antenna Mount Systems, 339602 (Sheet 3 of 5)



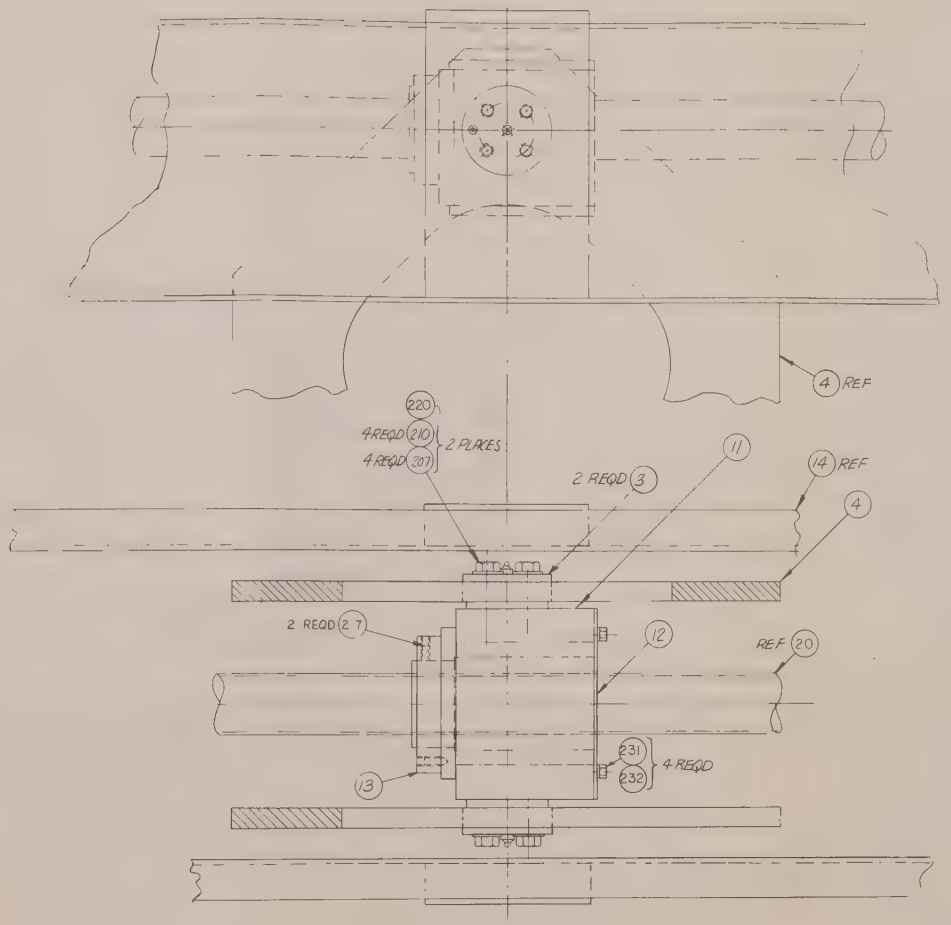


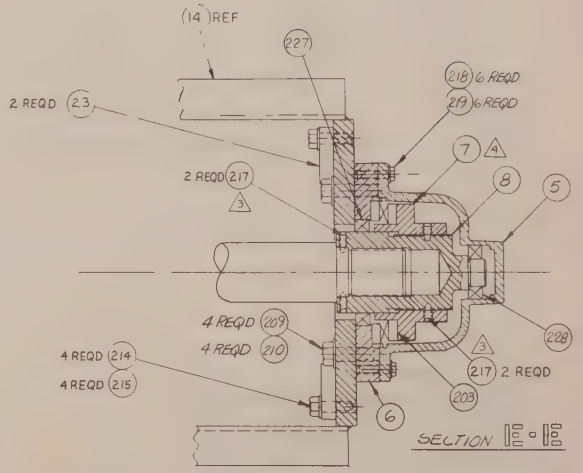
NOTE:

2 PARTS PICTURED ON DRAWING ARE FOR USE WITH 268362 CAST ACTUATOR HOUSING. PARTS CALLED OUT ON PARTS LIST AND DRAWING ARE FOR USE WITH 268372 WELDED ACTUATOR HOUSING.

3 BEFORE INSTALLING ITEM 217, MASK ALL SURFACES AND BEARINGS. DRILL .25 DIA X .2 DEEP HOLE THROUGH THE CENTER OF THE $\frac{1}{8}$-16 TAPPED HOLE. REMOVE ALL CHIPS BEFORE INSTALLING ITEM 217.

Figure 1-19. Azimuth Actuator Assembly - Model 8133, 10/11-Meter Antenna Mount Systems, 339602 (Sheet 4 of 5)





NOTE:

4 WHEN INSTALLING ITEM 7, TIGHTEN ITEM 7 UNTIL ALL THE BACKLASH IS REMOVED FROM THE SYSTEM. PRE-LOAD ITEM 7 BY TURNING AN ADDITIONAL $\frac{1}{8}$ TO $\frac{1}{4}$ TURN.

Figure 1-19. Azimuth Actuator Assembly - Model 8133, 10/11-Meter Antenna Mount Systems, 339602 (Sheet 5 of 5)

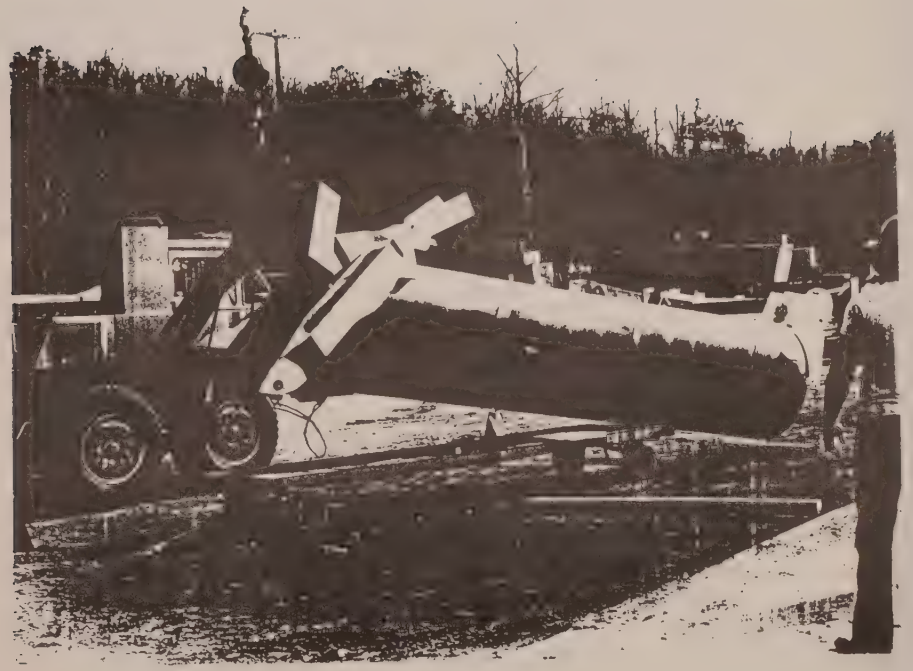
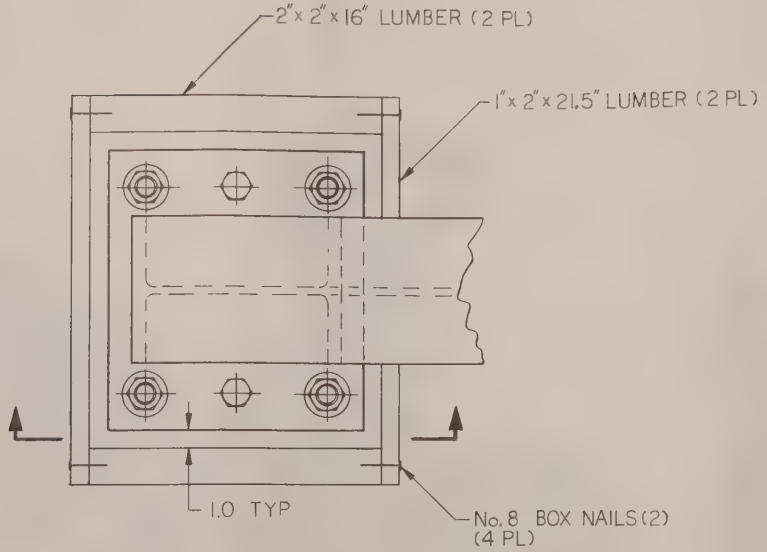


Figure 1-20. Lifting Mount, 10/11-Meter
Antenna Mount Systems



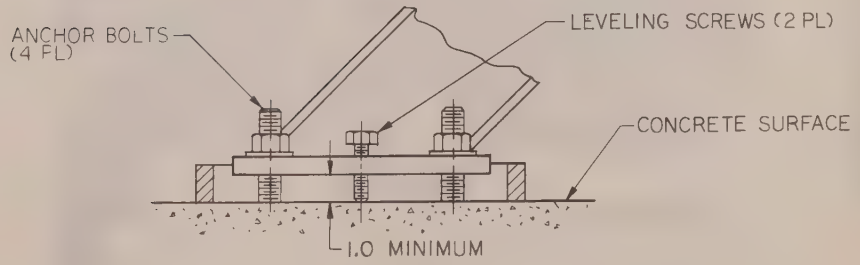


Figure 1-21. Leveling Screws And Grouting, 10/11-Meter Antenna Mount Sytstems, 364438

This section of the manual manual provides instructions for assembly, installation, and maintenance of the Model 8111-2A, 10-Meter Reflector, and Model 8114-2A, 11-Meter Reflector.

Any components or options that would be supplied with a specific Series 8000 Earth Terminal will be covered in the system manual.

The procedures outlined in this and other manuals, comprising the system, are interrelated in many areas. Therefore, it is very important that the procedures covering all aspects of the entire earth terminal be thoroughly understood as a complete and integral unit. Close adherence to this recommendation will enable work to proceed quickly and smoothly in a safe, professional manner.

The Models 8111-2A and 8114-2A shaped reflectors, in combination with their respective shaped subreflectors and feed systems, are optically designed to yield high-efficiency.

Each reflector assembly consists of a machined central hub, to which are attached the radial trusses and the reflector panels. Ample space is provided inside the hub for the mounting of redundant low-noise amplifiers and switching equipment. The hub is weather resistant and has an access cover on the rear surface for convenient service and inspection of the feed electronics. Each reflector panel is a single piece manufactured on precision tooling to ensure accuracy and to allow interchangeability. Machined tabs on the radial trusses support the panels and lock-in the overall shape and antenna surface tolerance. Optical panel alignment during installation is thereby eliminated.

The reflector assemblies are made entirely of aluminum. The choice of a single material for the structure has the advantage of a single coefficient of thermal expansion for all parts. Aluminum has a thermal conductivity that is approximately three times that of steel. An all-aluminum antenna will more quickly reach thermal equilibrium when differentially heated by the sun, wind chill, or when optional panel deicing heaters are used. Differential expansion or contraction is then a transient condition which is minimized by high thermal conductivity of the Scientific-Atlanta all-aluminum antenna reflector.

The reflector is produced in precision jigs and fixtures. All attachment points are machined on set precision tooling. The 6-foot-diameter hub has 48 machined attachment pads for the 24 structural backup rib/trusses. The rib/trusses each have machined mounting bars which locate the reflector surface panels. Each panel is fabricated on a special shaping fixture that consists of a number of aluminum templates which were contoured on a numerically controlled machine. This fixture creates the desired surface shape in the reflector panels and locates reference attachment holes and edges to within 0.003 inch of the desired surface. The overall surface tolerance of the assembled reflector results in 0.040-inch rms static as referenced to the theoretical shaped contour.

The panels are reinforced by a number of serrated rib members which are both welded and riveted to the panel facings in a manner developed by Scientific-Atlanta to minimize shrinkage and distortions which would occur in an all-welded assembly. The reflector has no field adjustments for locating discrete points into difficult-to-establish proper position.

The reflector panels are paint finished with a high reflectance white paint applied over a chromate conversion coating. This special paint diffuses solar radiation to minimize subreflector heating from the reflector. The reflector trusses also have a chromate conversion sub-coating but have a finish coat of a higher gloss white paint for a long lasting premium appearance.

The reflector needs no expansion joints of compliant attachment points to accommodate differential expansion of dissimilar materials. Each Scientific-Atlanta reflector has substituted machining accuracy at the factory for correctional assembly in the field. When assembled, the reflector is a strong, rigid structure that is ready for operation.

Drawings are provided at the end of this section. Therefore, the assembly instructions will not be made complex by attempting to specify, in written form, the information which is adequately supplied on the drawings. Packing lists are supplied on shipping crates and parts lists are supplied on the drawings. Scientific-Atlanta cannot assume any responsibility if the assembly procedures presented in this manual are not properly followed. Do not make substitutions or alterations without the approval of Scientific-Atlanta, Inc. Please call the factory if complications with these procedures arise.

CAUTION

Assembly and installation of the reflector assembly should only be done during fair weather and low wind conditions.

Scientific-Atlanta provides a corrosion prevention kit with these reflector assemblies for enhanced corrosion resistance of bolted joints. All plated fasteners used in assembly of the reflector should be painted with the supplied paint after final tightening.

The tools required for assembly are listed in the applicable Earth Terminal Antenna Assembly System Manual.

These reflectors have been designed in accordance with the Aluminum Construction Manual - Specifications for Aluminum Structures (Third Edition, April 1976), published by the Aluminum Association.

Specifications for the Model 8111-2A 10-Meter Reflector are presented in table 2-1.

Table 2-1. Reflector Assembly Technical Specifications, Model 8111-2A, 10-Meter Reflector

Characteristic	Specification
Size	10-meter diameter, specially-shaped surface
Weight	4,200 pounds
Surface Tolerance	0.40 inch rms, static 0.55 inch rms, 60 mi/h winds
Survival Wind Velocities (safely supported)	125 mi/h, no ice accumulation 87 mi/h with 2 inches radial solid ice accumulation
Shipping Data	
Shipping Volume	1,450 cubic feet
Shipping Weight	8,000 pounds

The technical specifications for the Model 8114-2A, 11-Meter Reflector are presented in table 2-2.

Table 2-2. Reflector Assembly Technical Specifications, Model 8114A, 11-Meter Reflector

Characteristic	Specification
Antenna Size/Type	11-meter diameter, shaped surface, dual reflector
Reflector Assembly Weight	5,000 pounds
Survival Wind Loads	125 mi/h with no ice accumulation
	87 mi/h with 2 inches radial solid ice accumulation
Surface Tolerance	0.040-inch rms, static
	0.055-inch rms, 60 mi/h winds
Shipping Data	
Volume	1,574 cubic feet
Weight	8,200 pounds

GENERAL

This portion of the manual provides assembly and installation instructions for the Models 8111-2A and 8114-2A Reflectors.

The easiest and preferred method of assembly is to assemble the reflector on the ground and lift it by crane onto the elevation-over-azimuth mount for installation. However, if a crane is not available, the reflector can be assembled atop the mount. With this method, the reflector is lifted and assembled atop the mount one item at a time.

NOTE

Scientific-Atlanta, Inc. recommends that the Earth Terminal be assembled with the use of a suitable crane. A 20-ton crane with an 80-foot boom will be required.

CAUTION

All personnel atop the mount must use safety belts. Two recommended safety belt attachment points are:

1. The upper frame area of antenna mount.

2. A properly attached truss.

UNPACKING AND INSPECTION

Exercise caution when unloading and unpacking equipment. Carefully open the crates and inspect the contents for shipping damage. If a claim for damage is to be made, save the packing material and crate to substantiate the claim. File the claim with the carrier and notify the local Scientific-Atlanta sales office immediately. Do not return units until shipping instructions have been received from the factory.

After all units have been removed from the crate, check all packing for smaller items and compare the units received against the packing list.

Do not attempt to assemble any of the reflector assembly unless all the items and their proper quantity have been accounted for and have not been damaged during shipment.

DETAILED REFLECTOR ASSEMBLY INSTRUCTIONS

The assembly instructions will not be made complex by attempting to cover the specific hardware required. This information is supplied on the applicable drawings.

Cleanliness of the precision mating parts that make up the reflector assembly is essential to proper fit and reflector surface accuracy. The mechanical pads on the outside of the hub and the machined surfaces on the large ends of the trusses must not be scratched or marred. Tapped holes in the ends of the truss beams and on the hub must be kept free of dirt or other foreign matter. For these reasons, only remove the reflector parts from their crates or pallets as required.

DETAILED REFLECTOR ASSEMBLY ON-THE-GROUND

Assemble the reflectors on the ground by the following steps. It will be assumed in the instructions that a crane is available for use in positioning the hub and lifting the reflector. Make certain that the appropriate size washer is used with each nut and bolt. Refer to the applicable drawing and parts lists at the end of this section for additional data and typical section views. Before starting the assembly, verify the following:

a. Check all the hardware specified for size and quantity that has been received and organize into separate groups for ready use.

b. Examine 24 reflector panels and 24 trusses in their crates. Identify four spar panels by the cut-out in the face of the panel for the sub-reflector spar mounting tab attached to the spar trusses. Identify four spar trusses by the spar support clevis welded to the tip end of the truss. Examine the hub and identify the four sets of spar truss mounting pads which are painted red. Identify one panel which is identical to a regular panel except that it has a "Scientific-Atlanta" decal on the front surface.

c. Each panel has a narrow width end and a wide width end, which will be referred to as the inside and outside of the panel, respectively. The reflector surface will be referred to as the front side of the panels and hub with the opposite side as the rear surfaces.

d. Clockwise and counterclockwise is as observed by a person looking down onto the front of the reflector while the hub is positioned with its rear side towards the ground.

e. Remove the two semi-circular halves of the hub rear covers and set them aside for later installation. Set the reflector hub on a stable support such as wooden blocks. The rear side of the hub should be pointing down. Three lifting eye screws are supplied with the hub to assist in lifting to the selected location. Remove these eye screws once the hub has been positioned for reflector assembly.

f. The detailed assembly procedures will be divided into separate instruction sections for the 10- and 11-meter reflectors. Drawing numbers will be referred to during the instruction. The drawings included in this manual are examples of 10- and 11-meter reflector assemblies with

motorized polarization drives and no deice system. A drawing is included of a manual polarization hub assembly which will replace the motorized hub assembly in some applications. Also, some installation requirements call for deiced panel assemblies. In those cases the deiced panels would be substituted for the non-deiced versions discussed in this publication.

g. The parts lists components are referenced to the actual assembly drawings by the item numbers located in column one. The item numbers appear on the drawings as circular callouts with leader lines indicating the specific part.

h. The basic reflector assembly sequence is:

1. Attach trusses to hub
2. Assemble reflector panels to trusses
3. Install intercoastal bracing angles
4. Tighten fasteners
5. Lift reflector onto antenna mount structure.

Refer to figure 2-3 for the complete list of parts and installation assembly details that follow.

Install both alignment screws (item 16) into the two hole locations on the rear side of the hub. The hub must be blocked-up high enough to clear these screws. With the hub assembly (item 7 or item 8) positioned rear side down, locate the four sets of truss mounting blocks indicated by delta note two (see sheet 2). They are located 90 degrees apart, and painted red on the hub. Mount a spar truss (item 10) to each of the truss mounting blocks. To the remaining 20 positions, attach a truss (item 9). Install the 20 trusses referring to sheet 3, detail C, and delta notes seven and eight. Use hardware (items 214, 205, and 206). Insure that the shoulder of the truss pad block sits firmly on the mating seat of the front hub pad before tightening. Tighten the truss mounting screws to 75 pounds-feet of torque.

CAUTION

When assembling the reflector on the ground, the trusses should be installed by alternating from one side of the reflector to the other. This will prevent an unbalanced load that could cause the assembly to tip over.

With the trusses installed, extend 4-foot lengths of 2 x 4 lumber from halfway out on the trusses to the ground. Clamp the boards securely in place with "C" type clamps. This should be done on every other truss to provide outrigger stability to the reflector while it is being assembled.

CAUTION

As an additional precaution, as the reflector panels are assembled, the reflector will become highly susceptible to wind forces. Therefore, if the reflector is being assembled on the ground, secure the hub-truss assembly before installing panels. To secure the assembly, tie six equally spaced trusses to ground stakes using wire rope. Secure the rope to the outermost junction on the lower main radial rib of the truss. Do not use a mechanical device to tighten the ropes since this could damage the trusses. This should prevent the reflector from overturning. This tie-down procedure is a mandatory precaution if the reflector is to be left on the ground overnight and unattended.

Before starting the reflector panel assembly, the 24 spring pins (item 207, sheet 3), must be inserted in the innermost tab of all the trusses (items 9 and 10, sheet 2). The pins are 1 inch long and should extend at least 3/8 inch beyond the left side of the tabs as seen from inside the hub.

Not that when standing inside hub, the tabs on the trusses are offset to the right of the centerline of the truss beam. On the innermost tab there are two holes, one large and a small one above it (all other tabs have just one large hole). The small hole is for the spring pins.

Also notice that the second set of holes, from the inside edge of the panels have the same two-hole pattern as the innermost truss tab.

The flanges of two adjacent panels will always be attached on the left side of the truss tabs, when looking out from the inside of the hub.

Start the panel installation with a single decal panel (item 3 or 6 - heated). Note that the decal panel is identical to the regular panels (item 1 or 4 - heated). The decal panel should be installed so that it is located at the top center of the reflector. See figure 2-3 for location.

Place the left side of the first panel on the left side of the tabs of the mating trusses. Slide it to the right until the inside of the left flange is flush with the tabs and the small hole in this flange is over the roll pin in the tab on the truss. Support the right side of this panel by loosely installing four or five nuts and bolts between the flange of the panel and the tabs on the reference truss.

Working in a counterclockwise direction with another regular panel (item 1 or 4 - heated), place the left side of the panel on the left side of the tabs of the next truss pair. Slide the panel to the right, being sure to line up the pin hole in the panel with the pin in the truss tab, until the right flange of the panel is flush with the left flange of the first and adjacent panel. The right side of the left flange on this next panel should now be flush with the tabs on associated truss. Bolt the adjacent flanges together, using the hardware indicated on the drawing. Hand tighten the attachment hardware.

Continue in a counterclockwise direction using item 2 or 5 - heated spar panels at positions where item 10 spar trusses have been used.

Continue the process until all 24 panels have been installed. Note that the bolts supporting the right side of the first panel will have to be removed before the last panel can be installed. Also, the pin in the last truss will have to be tapped to the right until it is flush with the left side of the tab. Be sure to support the first panel while installing the last panel. All hardware holding the panels together should only be hand tightened. A specific torque sequence will be performed after complete reflector assembly.

Install the 23 short truss braces (item 11) onto the trusses. Loosely attach.

NOTE

Omit the short truss brace at the decal panel (uppermost) location to provide for elevation actuator clearance.

Install the long truss braces (item 12) onto the trusses. Loosely attach.

Perform the following tightening sequence.

a. Have one person stand on the surface of the reflector, with all the weight of one foot over the joints; begin tightening the bolts which hold the panels to the trusses and to each other.

b. Start at the inner tab and tighten all 24 panels. Then proceed to next radial tab and tighten all 24 panels.

c. Continue to tighten forming concentric circles of tightened connections until the last largest circle is completed.

d. Tighten all hardware to 30 pounds-feet of torque.

CAUTION

Do not stand or walk inside the NO-STEP circle on the reflector to prevent damage to the panels.

Each panel should be pushed down on top of the tabs on the trusses. The expected surface tolerance is absolutely dependent on these critical contact points. This is the reason for someone to stand over and apply alignment pressure to the joint. Also, the edges of adjacent panels should be as close to level with each other as possible. Therefore, bias the pressure on the left panel edge since that edge is seated on the truss tab. Make the "floating" right panel edge flush with the seated left panel edge. All personnel who stand on the reflector must wear soft, rubber-soled shoes to protect the reflector.

Tighten all bolts holding the truss braces (items 11 and 12) to the trusses to 30 pounds-feet of torque only after all panel bolts have been tightened.

If the reflector has been assembled on the ground, the reflector is ready to be lifted to the top of the mount. Four cables or lifting straps, each 30 feet long, will be required for this task. Attach one each to the outside holes of each of the four spar attachment tabs. These four outside holes have clearance for 3/4-inch-diameter bolts or anchor shackles.

CAUTION

The crane and cables or lifting straps used to lift the assembled reflector atop the mount must be capable of supporting the 4,200 pound assembly. Also, make certain that all slack in the cables or straps is removed before lifting. The reflector must be lifted as evenly as possible.

CAUTION

Do not lift the reflector without having at least three people on the ground, with guide ropes, to help stabilize the reflector. This will prevent the reflector from swaying into the mount or other obstacles. Installation of the reflector atop the mount should not be attempted unless fair weather and low wind conditions exist.

Before lifting the reflector, the upper hub attachment load frame of the Model 8020 antenna mount should be positioned such that the hub interface surface is horizontal.

After attachment of crane to reflector assembly, raise the reflector off the ground far enough to make sure the hub rear mounting surface is also horizontal.

CAUTION

Position all personnel away from the underside of the reflector as it is suspended from the crane. Ensure that no personnel are physically between the hub and the antenna mounting surface. Always keep all heads, hands, and arms clear of being pinched between hardware items.

The alignment screws (item 16, sheet 2) will assist in positioning the reflector to the proper orientation while lowering it into place on the antenna mount. When 7 of the 9 attachment screws (item 208, sheet 4, detail E) are in place, then the alignment screws may be taken out and replaced by the remaining two attachment screws. Tighten the attachment screws (item 208, sheet 4, detail E) to 350 to 375 pounds-feet of torque. Detach the crane.

Attach the electrical ground assembly item 14 as shown on sheet 4.

The reflector assembly is now complete and ready for the installation of the feed, subreflector, deice equipment, control cables, and other applicable options. Refer to the feed and subreflector manuals for detailed assembly instructions. Once the necessary feed electronics installation work has been completed inside the hub, the two rear hub covers may be reinstalled and the safety lanyards attached to the reflector trusses as shown on sheet 2, delta note four.

Refer to figure 2-4 for the complete list of parts and installation assembly details that follow.

Install both alignment screws (item 16) into the two hole locations on the rear side of the hub. The hub must be blocked up high enough to clear these screws. With the hub assembly (item 7 or item 8) positioned rear side down, locate the four sets of truss mounting blocks indicated by delta note two, see sheet 2. They are located 90 degrees apart, and painted red on the hub. Mount a spar truss (item 10) to each of the truss mounting blocks. To the remaining 20 positions, attach a truss (item 9). Install the 20 trusses referring to sheet 3, detail C, and delta notes seven and eight. Use hardware (items 205, 206, and 214). Ensure that the shoulder of the truss pad block sits firmly on the mating seat of the front hub pad before tightening. Tighten the truss mounting screws to 175 pounds-feet of torque.

CAUTION

When assembling the reflector on the ground, the trusses should be installed by alternating from one side of the reflector to the other. This will prevent an unbalanced load that could cause the assembly to tip over.

With the trusses installed, extend 4-foot lengths of 2 x 4 lumber from halfway out on the trusses to the ground. Clamp the boards securely in place with "C" type clamps. This should be done on every other truss to provide outrigger stability to the reflector while it is being assembled.

CAUTION

As an additional precaution, as the reflector panels are assembled, the reflector will become highly susceptible to wind forces. Therefore, if the reflector is being assembled on the ground, secure the hub/truss assembly before installing panels. To secure the assembly, tie six equally spaced trusses to ground stakes using wire rope. Secure the rope to the outermost junction on the lower main radial rib of the truss. Do not use a mechanical device to tighten the ropes since this could damage the trusses. This should prevent the reflector from overturning. This tie-down procedure is a mandatory precaution if the reflector is to be left on the ground overnight and unattended.

Before starting the reflector panel assembly, the 24 spring pins (item 207, sheet 3), must be inserted in the innermost tab of all the trusses (items 9 and 10, sheet 2). The pins are 1 inch long and should extend at least 3/8 inch beyond the left side of the tabs as seen from inside the hub.

Note that when standing inside hub, the tabs on the trusses are offset to the right of the centerline of the truss beam. On the innermost tab there are two holes, one large and a small one above it (all other tabs have just one large hole). The small hole is for the spring pins.

Also notice that the second set of holes, from the inside edge of the panels have the same two-hole pattern as the innermost truss tab.

The flanges of two adjacent panels will always be attached on the left side of the truss tabs, when looking out from the inside of the hub.

Start the panel installation, with a single decal panel (item 3 or 6 - heated). Note that the decal panel is identical to the regular panels (item 1 or 4 - heated). The decal panel should be installed so that it is located at the top center of the reflector. See figure 2-4 for location.

Place the left side of the first panel on the left side of the tabs of the mating trusses. Slide it to the right until the inside of the left flange is flush with the tabs and the small hole in this flange is over the roll pin in the tab on the truss. Support the right side of this first panel by loosely installing four or five nuts and bolts between the flange of the panel and the tabs on the reference truss.

Working in a counterclockwise direction with another regular panel (item 1 or 4 - heated), place the left side of the panel on the left side of the tabs of the next truss pair. Slide the panel to the right, being sure to line up the pin hole in the panel with the pin in the truss tab, until the right flange of the panel is flush with the left flange of the first and adjacent panel. The right side of the left flange on this next panel should now be flush with the tabs on associated truss. Bolt the adjacent flanges together, using the hardware indicated on the drawing. Hand tighten the attachment hardware.

Continue in a counterclockwise direction using item 2 or 5 - heated spar panels at positions where item 10 spar trusses have been used.

Continue the process until all 24 panels have been installed. Note that the bolts supporting the right side of the first panel will have to be removed before the last panel can be installed. Also, the pin in the last truss will have to be tapped to the right until it is flush with the left side of the tab. Be sure to support the first panel while installing the last panel. All hardware holding the panels together should only be hand tightened. A specific torque sequence will be performed after complete reflector assembly.

Install the 23 short truss braces (item 11) on the trusses. Loosely attach.

NOTE

Omit the short truss brace at the decal panel (uppermost) location to provide for elevation actuator clearance.

Install the long truss braces (item 12) on the trusses. Loosely attach.

Perform the following torque-down sequence.

a. Have one person stand on the surface of the reflector, with all the weight of one foot over the joints; begin tightening the bolts which hold the panels to the trusses and to each other.

b. Start at the inner tab and tighten all 24 panels. Then proceed to next radial tab and tighten all 24 panels.

c. Continue to tighten forming concentric circles of tightened connections until the last circle is completed.

d. Tighten all hardware to 30 pounds-feet of torque.

CAUTION

Do not stand or walk inside the NO-STEP circle on the reflector to prevent damage to the panels.

Each panel should be pushed down on top of the tabs on the trusses. The expected surface tolerance is absolutely dependent on these critical contact points. This is the reason for someone to stand over and apply alignment pressure to the joint. Also, the edges of adjacent panels should be as close to level with each other as possible. Therefore bias the pressure on the left panel edge since that edge is seated on the truss tab. Make the "floating" right panel edge flush with the seated left panel edge. All personnel who stand on the reflector must wear soft, rubber-soled shoes to protect the reflector.

Tighten all bolts holding the truss braces (items 11 and 12) to the trusses to 30 pounds-feet of torque.

If the reflector has been assembled on the ground, the reflector is ready to be lifted to the top of the mount. Four cables or lifting straps, each 30 feet long, will be required for this task. Attach, one each, to the outside holes of each of the four spar attachment tabs. These four outside holes have clearance for 3/4 inch diameter bolts or anchor shackles.

CAUTION

The crane and cables or lifting straps used to lift the assembled reflector atop the mount must be capable of supporting the 5,000 pound assembly. Also, make certain that all slack in the cables or straps is removed before lifting. The reflector must be lifted as evenly as possible.

CAUTION

Do not lift the reflector without having at least three people on the ground, with guide ropes, to help stabilize the reflector. This will prevent the reflector from swaying into the mount or other obstacles. Installation of the reflector atop the mount should not be attempted unless fair weather and low wind conditions exist.

Before lifting the reflector, the upper hub attachment load frame of the Model 8020 Antenna Mount should be positioned such that the hub interface surface is horizontal.

After attachment of crane to reflector assembly, raise the reflector off the ground far enough to make sure the hub rear mounting surface is also horizontal.

CAUTION

Position all personnel away from the underside of the reflector as it is suspended from the crane. Ensure that no personnel are physically between the hub and the antenna mounting surface. Always keep all heads, hands, and arms clear of being pinched between hardware items.

The alignment screws (item 16, sheet 2) will assist in positioning the reflector to the proper orientation while lowering it into place on this antenna mount. When 7 of the 9 attachment screws (item 208, sheet 4, detail E) are in place, then the alignment screws may be taken out and replaced by the remaining two attachment screws. Tighten the attachment screws (item 208, sheet 4, detail E) to 350 to 375 pounds-feet of torque. Detach the crane.

Attach the electrical ground assembly (item 14) as shown on sheet 4.

The reflector assembly is now complete and ready for the installation of the feed, subreflector, deice equipment, control cables, and other applicable options. Refer to the feed and subreflector manuals for detailed assembly instructions. Once the necessary feed electronics installation work has been completed inside the hub, the two rear hub covers may be reinstalled and the safety lanyards attached to the reflector trusses as shown on sheet 2, delta note four.

When replacing a single panel after the reflector has been assembled, the following procedure should be followed:

a. Looking out from the hub, drive the alignment spring pin on the left towards the right, until it no longer passes through either of the panels. Drive the right alignment spring pin towards the right until it no longer passes through the flange of the panel to be removed.

b. With the particular panel supported, along with the panel to its left, remove the hardware holding the panel to the two adjacent panels.

c. Now the panel can be lifted out of the assembly.

NOTE

If the panel to be removed happens to be a spar panel, the associated spar must be removed first, after the reflector has been positioned in the zenith or positive 90 degree elevation orientation.

To replace the panel, reverse the above process. Be sure the alignment spring pins are through the panels and that the panel is pushed down on top of the tabs on the trusses before tightening the bolts holding the panels together.

FEED POLARIZATION DRIVE

Some versions of Models 8111-2A and 8114-2A Reflectors are supplied with motorized feed polarization drive systems. These systems are pre-installed in the reflector hubs at the factory. The electrical connections are described in the applicable control unit instruction manual. The pictorial views and list of components for the polarization drive system are shown on drawing 268171 or 268172.

The drive system specifications are indicated in table 2-3.

Table 2-3. Feed Polarization Technical Specifications, Model 8039 Motorized System

Characteristic	Specification
Motor Size	1/4 HP, brakemotor, TEFC, 1,725 rpm
Power Requirements	208, 230/460V ac, 3 phase, 50/60 hertz; 1.2 amperes full load, 5.8 amperes locked, at 208 volts.

Table 2-3. Feed Polarization Technical Specifications, Model 8039 Motorized System - continued

Characteristic	Specification
Reducer	Worm gear, 600:1 ratio
Feed Rotation Rate	1.75 degrees per second
Drive Limits	Mechanical and electrical with clutch slip set for 400 pounds-feet torque at feed mounting ring.
Drive Type	Chain drive
Rotation Angle	186 degrees continuous
Angle Transducer	Potentiometer
Bearings	Permanently lubricated, ball bearing
Reducer Lubricant	Automatic transmission fluid, type DEXTRON II

After reflector installation, a few initial system setup steps need to be accomplished prior to use. An initial maintenance step per the following paragraph should be done. While doing this, the reducer breather vent plug should be installed. The vent plug is removed from the unit and attached to the reducer for shipment. To install, screw it into the uppermost threaded access hole in the reducer housing.

Maintenance of the polarization drive system should be accomplished upon initial installation and every six months thereafter. At these intervals the following items should be checked.

a. Check lubricant level in reducer.

b. Apply a thin film of grease to the chain and v-groove roller bearing surfaces. Take care not to get grease on the slip clutch mounted on the reducer output shaft. Use one of the following low temperature greases:

Texaco Low Temp #2346 (per MIL-G-23827A)
Shell Aeroshell #7 (per MIL-G-23827A)
Mobil Low Temp #28 (per MIL-G-81322C)
Mobile SHC 32 (similar to Mobile #28)

GENERAL

The following maintenance instructions apply only to the components of the Model 8111-2A and 8114-2A Reflectors described in this manual. The maintenance instructions for any special parts, such as those that would be supplied with a particular system, will be covered in a separate manual.

MAINTENANCE INSTRUCTIONS

The reflector is maintenance free except for keeping the finish in good condition and correcting any corrosion or loose fasteners. The following corrective measures should be performed whenever a problem arises with either the reflector surface finish or fasteners.

FINISH

Use the following materials and procedure to repair and retouch scratches and other finish problems such as corrosion and flaking.

MATERIALS

Solvent - toluene or naphtha

Detergent - household dishwashing soap

Thinner - XYLENE

Sandpaper - 320 grit wet/dry

Cheesecloth

Paint Brush - width, 1-inch

Wash primer - MIL-P-14504

Zinc chromate - Fed. Spec. TT-P-1757 Composition G

Top Coat:

Reflective Surfaces - Hi-Reflective Flat White No. 6

Triangle Paint Company
2222 Third Street
Berkeley, California 94710

Non-Reflective Surfaces - Gloss Finish: Rust-Oleum No. 7792, White. Flat Finish: Rust-Oleum No. 7790, White.

Rust-Oleum Corporation
2301 Oakton Street
Evanston, Illinois 60204

a. Clean the entire area around the damaged portion with solvent cleaners followed by a thorough wash with detergent and water. Rinse well and dry with clean cheesecloth. Do not recoat for 30 minutes or until surface is completely dry.

b. Damaged coatings may be repaired by fairing the damaged edges with 320 grit or finer sandpaper. Primer system must be reapplied if damage extends into the bare metal.

c. If recoating is to be accomplished in ambient temperatures higher than 100 degrees Fahrenheit, top coating shall be thinned with XYLENE. If coating appears too dry or grainy, add up to 50 percent mineral spirits to slow the evaporation rate.

NOTE

The top coat may be thinned in ratios up to two parts paint to one part thinner.

d. If repriming is required, apply a thin coat of wash primer and allow to dry for 15 to 30 minutes. Apply a full coat of zinc chromate primer and allow to dry for 2 hours. If surface is not smooth after drying, sand with 320 grit paper lubricated with toluene. Remove dust using a tack cloth (cheesecloth lightly coated with toluene).

FASTENERS

The fasteners need to be checked to make sure they are in place and have not obviously loosened. If a fastener is found to be loose, or there is cause to check all the fasteners, use a torque wrench to obtain the proper bolt tension. Torque values are given in table 2-4.

If corrosion of a fastener becomes evident, it should be corrected immediately as follows:

a. Determine extend of corrosion. If base material of fastener is corroded, replace with identical size and type. Refer to drawings parts list for fastener size and type.

b. Remove any corrosion from the fastener (if reused) and surrounding area with a wire brush.

c. Clean parts with toluene or naphtha solvent

d. After fastener is tightened and paint is dry enough to be recoated, spray fastener head, washers and nut with white paint.

In the case of extensive corrosion of a fastener, i.e., the base material is corroded, replace with identical size and type (SAE Grade 5 steel). Refer to drawing parts list at the end of this section.

Table 2-4. Recommended Torque Values*

Bolt Size	Pounds-Feet Torque
1/4 - 20	9
5/16 - 18	18
3/8 - 16	30
7/16 - 14	50
1/2 - 13	75
9/16 -12	110
5/8 - 11	150
3/4 - 10	260**

* For lubricated or CAD plated grade 5 steel bolts.

**11-meter reflector truss mounting screws are to be tightened to only 175 pounds-feet of torque.

RECOMMENDED SPARES

There are no recommended spares for the reflector assemblies. All parts of the reflector are durable hardware items and designed for a service life in excess of 15 years.

INTRODUCTION

Drawings pertaining to the Model 8114A Reflector are located in this section. Replacement parts are identified on the assembly drawings. Table 2-5 is a listing of the assembly drawings by part number.

Table 2-5. Assembly Drawing Index

Drawing No.	Title	Figure No.
268171	Hub Assembly, Manual Polarization, 10- and 11-Meter Reflector	2-1
268172	Hub Assembly, Motorized Polarization, 10- and 11-Meter Reflector	2-3
359422 through 359427	Reflector Installation, 10-Meter Antenna, Model 8111-2A	2-3
359432 through 359437	Reflector Installation, 11-Meter Atnenna Model 8114-2A	2-4

ITEM NO.	QTY.	A-A SPEC NO.	DESCRIPTION	SIZE, SPEC AND GRADE OR COMPONENT VALUE	IDENTIFYING NO. OR PART NO.	REF'S NO.
46	AR	337716	ADHESIVE			
45	AR	268989	LUBRICANT			
44	8	71508	NUT, HEX	1/4-20 SCDP		
43	8	72506	SCREW, HEX HD	1/4-20 X 1 1/2 SCDP		
42	4	337737	NUT, SELF LOCKING	1/2-16 UNF SCDP		
41						
40	6	339151	WASHER V-ROLLER			
39	AR	89792	LOCTITE		271-31	LOC
38						
37	2	72597	SCREW, HEX HD	3/8-16 X 2 3/4 SCDP		
36	2	72576	SCREW, HEX HD	3/8-16 X 3/4 SCDP		
35	4	73282	WASHER, FLAT	3/8 SCDP		
34	8	337719	TACK			
33	4	337721	CAP CAPLUG		NO. 1-X	
32	1	337712	CAP CAPLUG		STP-5	
31	8	75445	NUT, HEX	4-40 SCDP		
ITEM OR PART NO.	QTY. REQD	A-A SPEC NO.	DESCRIPTION OR NOMENCLATURE	SIZE, SPEC AND GRADE OR COMPONENT VALUE	IDENTIFYING NO. OR PART NO.	REF'S NO.

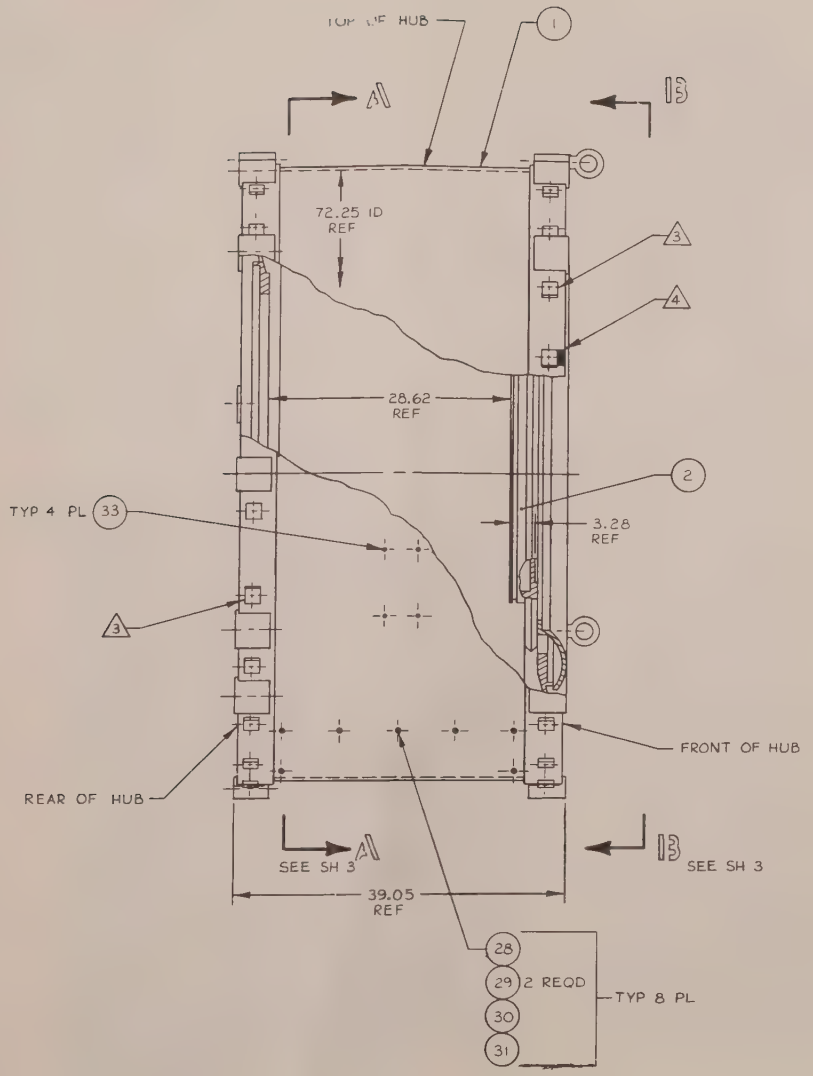
ITEM NO.	QTY. REQD	A-A SPEC NO.	NOMENCLATURE OR DESCRIPTION	SIZE, SPEC AND GRADE OR COMPONENT VALUE	IDENTIFYING NO. OR PART NO.	REF'S NO.
30	8	76779	WASHER, LOCK	NO. 4 SCDP		
29	16	83732	WASHER, FLAT	NO. 4 SCDP		
28	8	83747	SCREW PAN HD	4 40 X 1/2 SCDP		
27	1	337723	CAP, CAPLUG	NO. 12		
26	2	83456	NUT HEX	8 32 SCDP		
25	2	76525	WASHER, LOCK	NO 8 SCDP		
24	4	80252	WASHER FLAT	NO 8 SCDP		
23	2	83448	SCREW PAN HD	8 32 X 1/2 SCDP		
22	4	171166	CAP CAPLUG		NO 6	
21	2	171167	CAP CAPLUG		NO 11	
20	2	77636	GROMMET	5/8 ID		
19	30	73278	WASHER, FLAT	1/4 SCDP		
18	14	72493	SCREW, HEX HD	1/4-20 X 3/4 SCDP		
17						
16						
15						
14						
13	2	339153	V-ROLLER, ECC			
12	1	213740	NAMEPLATE			
11	4	268408	WATER DEFLECTOR			
10	2	337735	ROLLER, V-GROOVE			
9						
8	1	268201	FEED LOCK			
7	1	268981	GROUND CABLE	4.0 FEET		
6	1	142178	PRESSURE LABEL			
5	1	268449	LABEL PLATE			
4	1	268704	WG REAR MOUNT			
3	2	260614	REAR COVER			
2	1	268112	FEED MTG RING			
1	1	263994	HUB FABRICATION			
ITEM OR PART NO.	QTY. REQD	A-A SPEC NO.	NOMENCLATURE OR DESCRIPTION	SIZE, SPEC AND GRADE OR COMPONENT VALUE	IDENTIFYING NO. OR PART NO.	REF'S NO.

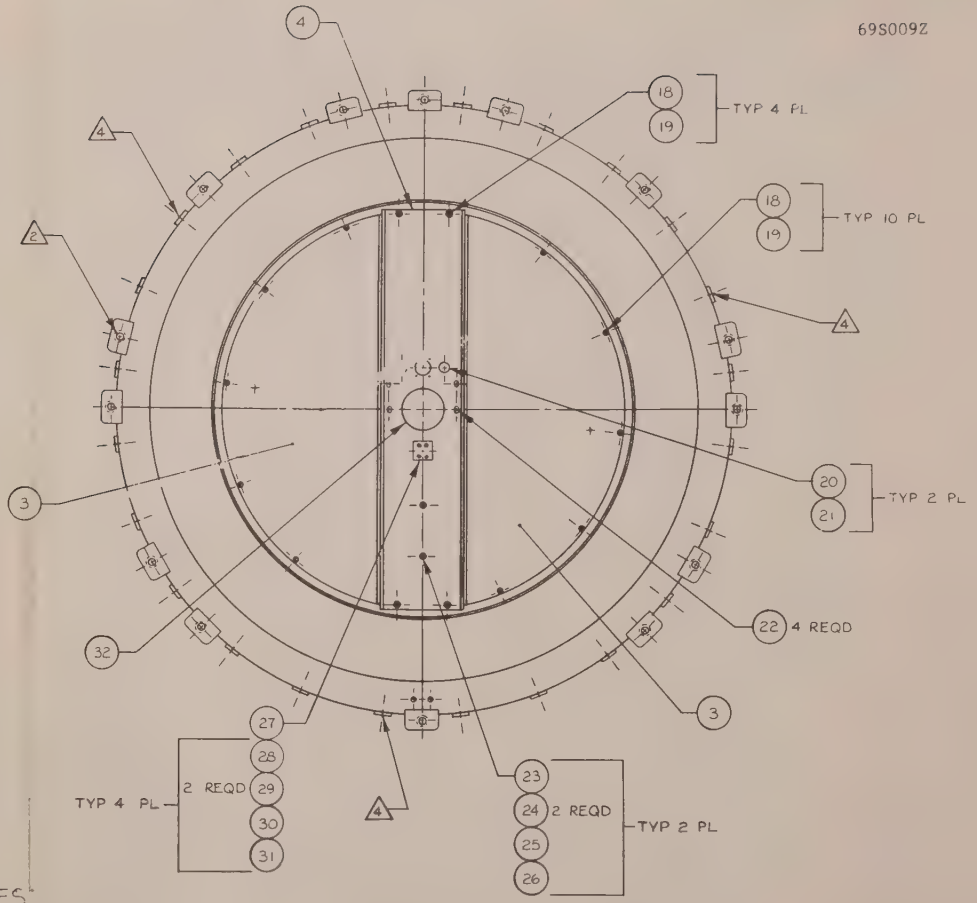
PARTS LIST

NOTES:

1. CHECK HUB ASSY PER SCIENTIFIC-ATLANTA PROCEDURE 338903.
2. ⚠2 THROUGH ⚠4 SEE SHEET 2.
3. ⚠5 THROUGH ⚠6 SEE SHEET 3.
4. ⚠1 SEE SHEET 2.

Figure 2-1. Hub Assembly, Manual Polarization, 10/11-Meter Antenna Reflector, 268171 (Sheet 1 of 3)

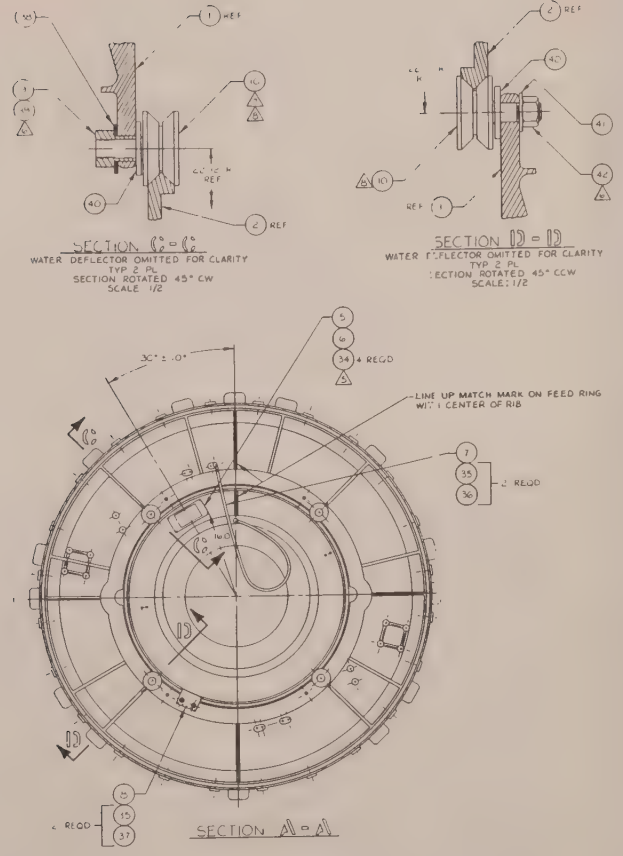




NOTES:

2. DO NOT PAINT TAPPED HOLES OR MOUNTING BLOCK FACES THIS SIDE OF HUB ONLY.
3. DO NOT PAINT CLEARANCE HOLES OR MOUNTING BLOCK FACES, TYP 48 PLACES.
4. PAINT RED ENAMEL ON SURFACE AREA NEXT TO MOUNTING BLOCKS AS SHOWN FOR LOCATION OF SPAR TRUSSES, 3 PLACES, ONE END OF HUB ONLY.

Figure 2-1. Hub Assembly, Manual Polarization, 10/11-Meter Antenna Reflector, 268171 (Sheet 2 of 3)



NOTES:

1. APPLY SELF ADHESIVE LABEL, ITEM 6, ONLY AFTER SURFACE ON LABEL PLATE HAS BEEN CLEANED OF DIRT AND GREASE.
2. TORQUE SEALING ROLLERS TO 50 FT-LB.
3. MOUNT FEED RING, ITEM 2 INTO BEARING ROLLER, ITEM 10. INSTALL ECCENTRIC ITEM 9 ON BEARING ROLLER AS SHOWN. ADJUST ECCENTRIC TO MINIMIZE PLAY AND LOCK IN PLACE BY TIGHTENING BEARING ROLLER WHILE HOLDING ECCENTRIC IN PLACE. ALLOWABLE GAP BETWEEN FEED RING AND BEARING ROLLERS IS 0.0 TO 0.015 INCH MAX. INSTALL EXPANSION PLUG, WHICH IS INCLUDED WITH EACH BEARING ROLLER TO BEARING ROLLER AFTER ADJUSTMENT.
4. SPRAY BEARING ROLLERS WITH FILM LUBRICANT ITEM 45.
5. SEAL WATER DEFLECTOR, ITEM 11, AT 4 JOINTS AND AT ALL POINTS OF CONTACT WITH HUB AND FEED RING USING ADHESIVE, ITEM 46. ROTATE BY HAND THE FEED RING TO CHECK CLEARANCES.
6. CENTER NAMEPLATE ON HUB FRONT CAP BETWEEN TRUSS TABS. ENTER REQUIRED INFORMATION SHOWN ON NAMEPLATE, INCLUDING NEXT SEQUENTIAL SERIAL NUMBER.

Figure 2-1. Hub Assembly, Manual Polarization, 10/11-Meter Antenna Reflector, 268171 (Sheet 3 of 3)

ITEM OR FIND NO	QTY REQD	5-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING NO PART NO	PRCN NO
[illegible]	AR	171181	LUBRICANT			
65	3	83456	NUT, HEX	8-32 SCDP		
64	3	76555	WASHER, LOCK	NO. 8 SCDP		
63	3	72576	SCREW, HEX HD	$\frac{3}{8}$-16 X $\frac{3}{4}$ SCDP		
62	2	72601	SCREW, HEX HD	$\frac{3}{8}$-16 X 3.0 SCDP		
61	AR	268989	LUBRICANT			
60	11	87742	CABLE TIE	6.5 INCH LONG		
59	4	170523	SCREW, TAPTITE	8-32 X $\frac{1}{4}$ SCDP		
58	4	72496	SCREW, HEX HD	$\frac{1}{4}$-20 X $\frac{5}{8}$ SCDP		
57	3	87186	WIRE JOINT CONN		PT2	
56	AR	337716	ADHESIVE			
55	4	71511	NUT, HEX	$\frac{5}{16}$-18 SCDP		
54	8	73280	WASHER, FLAT	$\frac{5}{16}$ SCDP		
53	4	72545	SCREW, HEX HD	$\frac{5}{16}$-18 X 1 $\frac{1}{2}$ SCDP		
52	1	80020	CLUTCH	$\frac{5}{8}$ BORE		
51	10	72579	SCREW, HEX HD	$\frac{3}{8}$-16 X 1.0 SCDP		
50	2	336670	NUT, HEX	$\frac{3}{8}$-14 UNF SCDP		
49	2	268465	WASHER, FLAT	.88 ID X 2.250D X .19 THK		
48	18	73282	WASHER, FLAT	$\frac{3}{8}$ SCDP		
47	4	72829	SCREW, HEX HD	$\frac{3}{8}$-16 X 1 $\frac{1}{2}$ SCDP		
46	4	80252	WASHER, FLAT	NO. 8 SCDP		
45	4	268705	WASHER PLATE	2.5 X 2.3 X .25		
44	2	73198	WASHER, FLAT	1 $\frac{1}{8}$ SCDP		
43	AR FT	70693	CHAIN	$\frac{3}{8}$ PITCH SST		
42	AR	89792	LOCTITE		271-31	LOC
41	2	71424	CHAIN LINK			
40	2	72501	SCREW, HEX HD	$\frac{1}{4}$-20 X 1 $\frac{1}{4}$ SCDP		
39	8	337719	TACK			
38	2	83248	SCREW, PAN HD	8-32 X $\frac{1}{2}$ SCDP		
37	14	72493	SCREW, HEX HD	$\frac{1}{4}$-20 X $\frac{3}{4}$ SCDP		
36	38	73278	WASHER, FLAT	$\frac{1}{4}$ SCDP		
35	12	71508	NUT, HEX	$\frac{1}{4}$-20 SCDP		
34	8	72506	SCREW HEX HD	$\frac{1}{4}$-20 X 1 $\frac{3}{4}$ SCDP		
33	2	77636	GROMMET	$\frac{7}{8}$ ID		
32	2	171167	CAP CAPLUG		NO. 1	
31	4	171166	CAP CAPLUG		NO 4	
30	1	337712	CAP CAPLUG		ST 5	
29	4	75445	NUT, HEX	4-40 SCDP		
28	4	76779	WASHER, LOCK	NO. 4 SCDP		
27	8	83732	WASHER, FLAT	NO. 4 SCDP		
26	4	83747	SCREW, PAN HD	4-40 X $\frac{1}{2}$ SCDP		

PARTS LIST

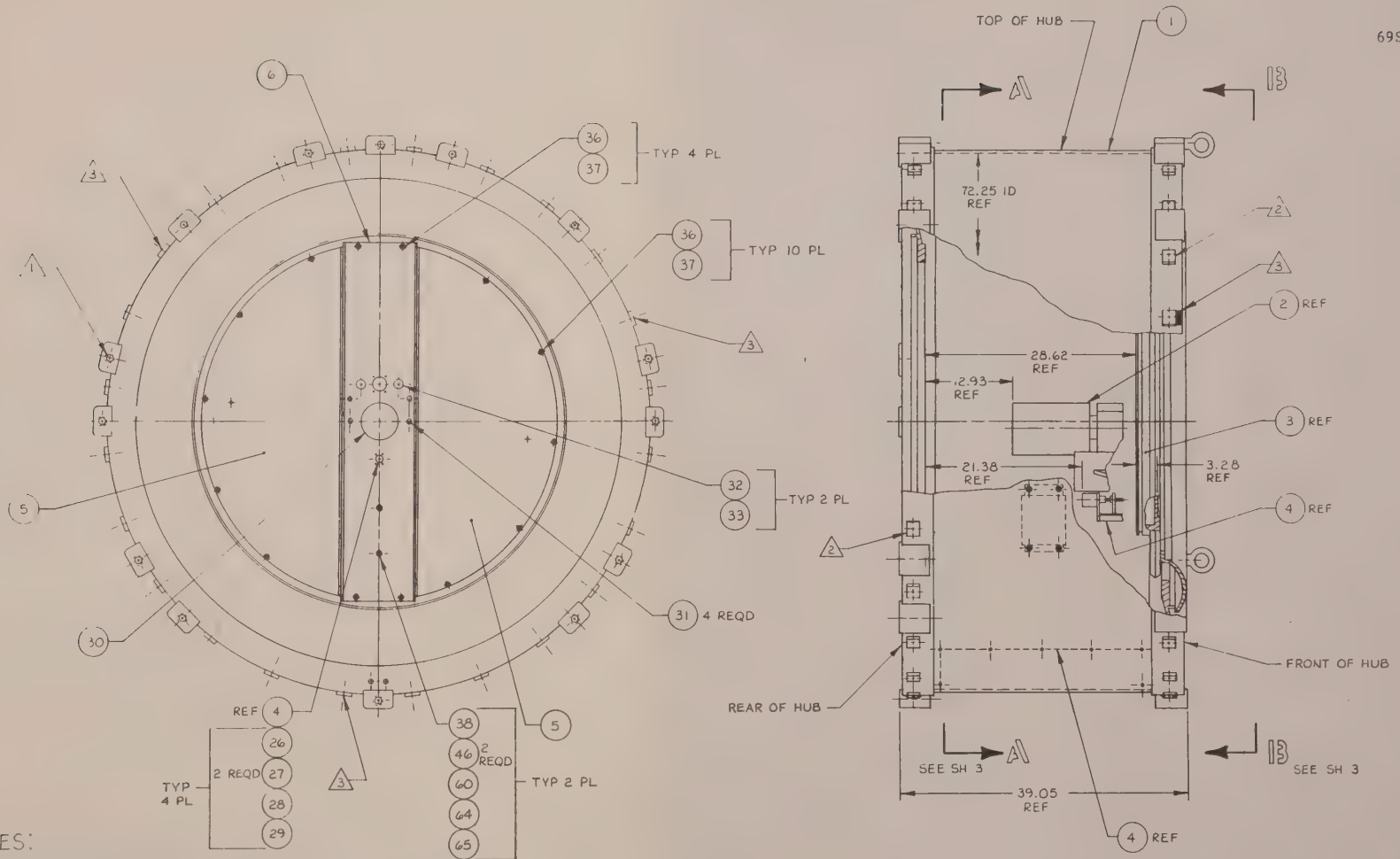
NOTES:

1. THROUGH 3 SEE SHEET 2.
4. AND 5 SEE SHEET 3.
6. THROUGH 8 SEE SHEET 4.
9. THROUGH 12 SEE SHEET 5.
13. SEE SHEET 6.
14. CHECK HUB ASSY PER SCIENTIFIC-ATLANTA PROCEDURE 268605.

ITEM OR FIND NO	QTY REQD	5-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING NO PART NO	PRCN NO
20	1	268981	GROUND CABLE	4.0 FEET		
19	1	268137	LIM SW BRACKET			
18	1	268526	JUNCTION BOX ASSY			
17	1	268141	MOTOR MTG BRKT			
16	1	268354	SPROCKET			
15	1	260786	REDUCER			
14	2	147069	LIM SW ACTUATOR			
13	4	268167	BEARING ROLLER			
12	2	260448	ECCENTRIC			
11	1	147065	CHAIN LINK			
10	4	268408	WATER DEFLECTOR			
9	1	213740	NAMEPLATE			
8	1	142178	PRESSURE LABEL			
7	1	268449	LABEL PLATE			
6	1	268704	WG REAR MOUNT			
5	2	260614	REAR COVER			
4	1	268133	POT DRIVE ASSY			
3	1	268112	FEED MTG RING			
2	1	260785	BRAKE MOTOR			
1	1	263994	HUB FABRICATION			

PARTS LIST

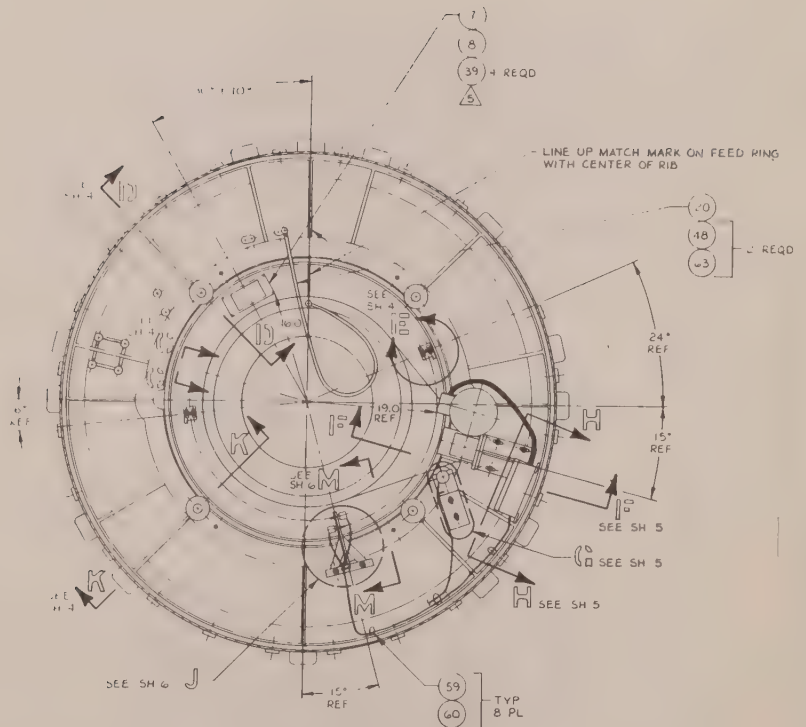
Figure 2-2. Hub Assembly, Motorized Polarization, 10/11-Meter Antenna Reflector, 268172 (Sheet 1 of 6)



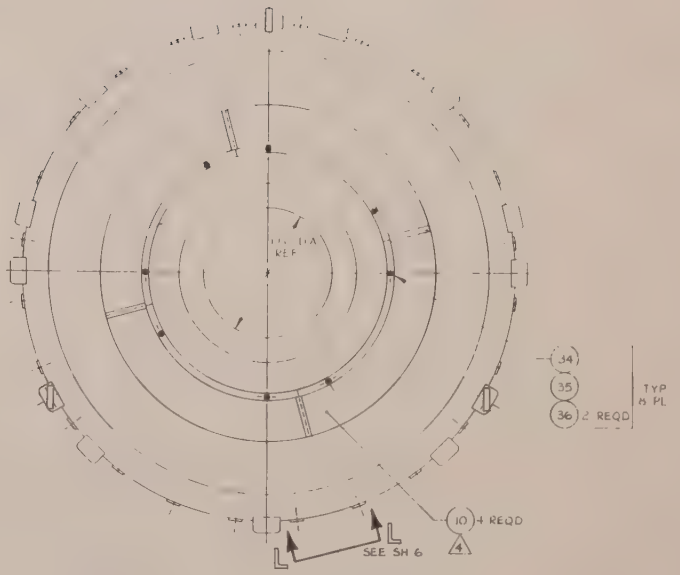
NOTES:

1. DO NOT PAINT TAPPED HOLES OR MOUNTING BLOCK FACES THIS SIDE OF HUB ONLY.
2. DO NOT PAINT CLEARANCE HOLES OR MOUNTING BLOCK FACES, TYP 48 PLACES.
3. PAINT RED ENAMEL ON SURFACE AREA NEXT TO MOUNTING BLOCKS AS SHOWN FOR LOCATION OF SPAR TRUSSES, 3 PLACES, ONE END OF HUB ONLY.

Figure 2-2. Hub Assembly, Motorized Polarization, 10/11-Meter Antenna Reflector, 268172 (Sheet 2 of 6)



SECTION A-A
SECTION FROM SH 2



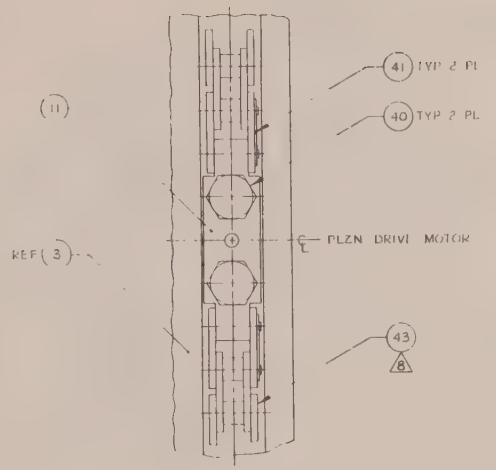
VIEW 13-13
VIEW FROM SH 2

NOTES:

4. SEAL WATER DEFLECTOR, ITEM 10, AT 4 JOINTS AND AT ALL POINTS OF CONTACT WITH HUB AND FEED RING USING ADHESIVE, ITEM 56. ROTATE BY HAND THE FEED RING TO CHECK CLEARANCES BEFORE DRIVE CHAIN ATTACHMENT.

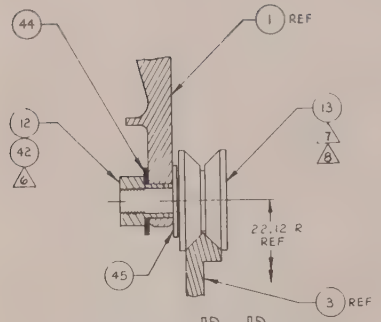
5. APPLY SELF ADHESIVE LABEL, ITEM 8, ONLY AFTER SURFACE ON LABEL PLATE HAS BEEN CLEANED OF DIRT AND GREASE.

Figure 2-2. Hub Assembly, Motorized Polarization, 10/11-Meter Antenna Reflector, 268172 (Sheet 3 of 6)



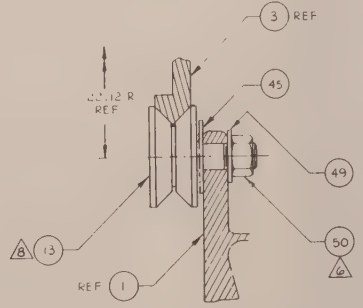
VIEW C - C

VIEW ROTATED 15° CCW
SCALE: 2/1
VIEW FROM SH 3



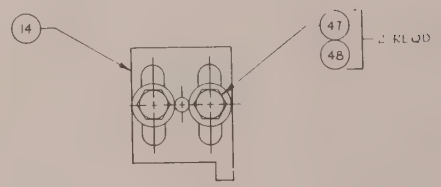
SECTION D - D

WATER DEFLECTOR OMITTED FOR CLARITY
TYP 2 PL
SECTION ROTATED 45° CW
SCALE: 1/2
SECTION FROM SH 3



SECTION K - K

WATER DEFLECTOR OMITTED FOR CLARITY
TYP 2 PL
SECTION ROTATED 45° CCW
SCALE: 1/2
SECTION FROM SH 3



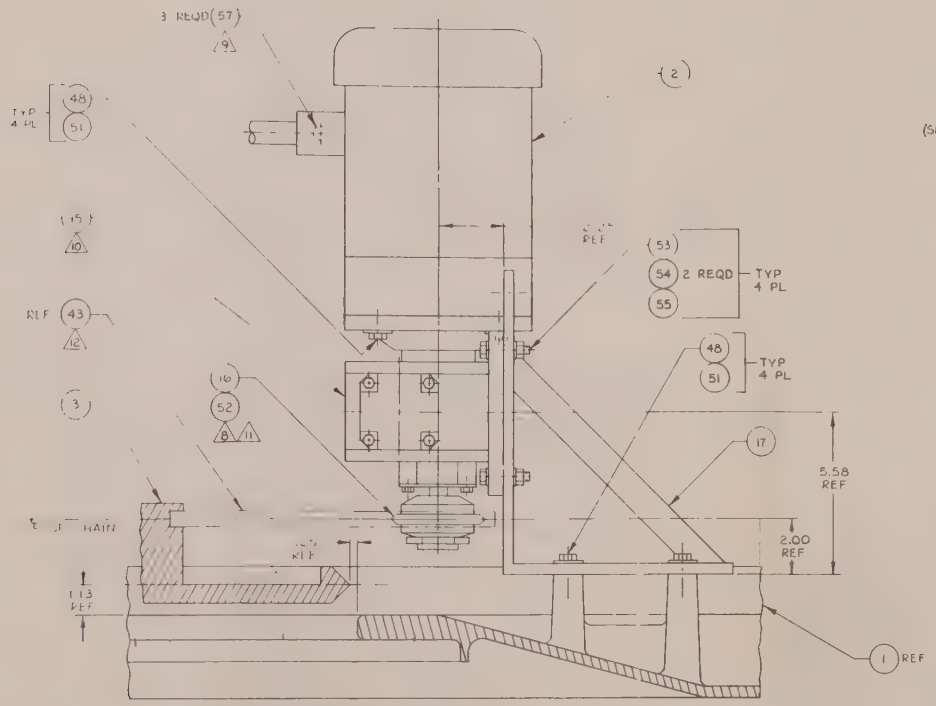
DETAIL E

HUB OMITTED FOR CLARITY
TYP 2 PL
DETAIL ROTATED 24° CW
SCALE: FULL
DETAIL FROM SH 3

NOTES:

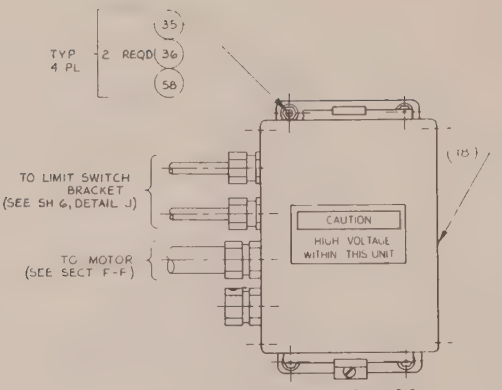
6. TORQUE BEARING ROLLERS TO 50 FT-LB.
7. MOUNT FEED RING, ITEM 3, INTO BEARING ROLLER, ITEM 13, INSTALL ECCENTRIC, ITEM 12, ON BEARING ROLLER AS SHOWN. ADJUST ECCENTRIC TO MINIMIZE PLAY AND LOCK IN PLACE BY TIGHTENING BEARING ROLLER WHILE HOLDING ECCENTRIC IN PLACE. ALLOWABLE GAP BETWEEN FEED RING AND BEARING ROLLERS IS 0.0 TO 0.015 INCH MAX. INSTALL EXPANSION PLUG, WHICH IS INCLUDED WITH EACH BEARING ROLLER, TO BEARING ROLLER AFTER ADJUSTMENT.
8. SPRAY DRIVE CHAIN, BEARING ROLLERS AND CHAIN SPROCKETS WITH FILM LUBRICANT, ITEM 61.

Figure 2-2. Hub Assembly, Motorized Polarization, 10/11-Meter Antenna Reflector, 268172 (Sheet 4 of 6)



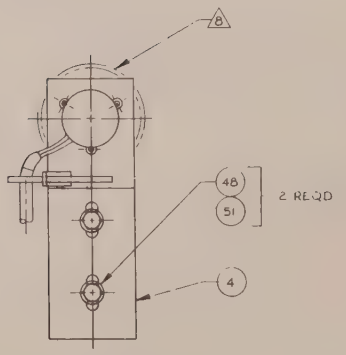
SECTION J-J

JUNCTION BOX ASSY OMITTED FOR CLARITY
SECTION ROTATED 15° CCW
SECTION FROM SH 3



VIEW H-H

HUB OMITTED FOR CLARITY
VIEW ROTATED 22°30' CCW
VIEW FROM SH 3



DETAIL C

HUB OMITTED FOR CLARITY
DETAIL ROTATED 20° CW
DETAIL FROM SH 3

NOTES:

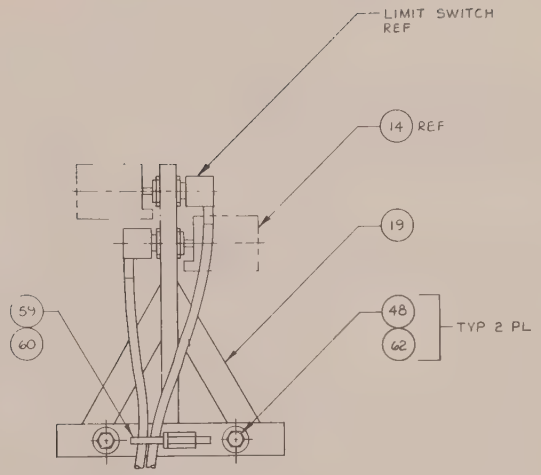
9. ATTACH CONDUIT FITTING FROM JUNCTION BOX ASSY, ITEM 18, TO JUNCTION BOX ON MOTOR, ITEM 2. CONNECT GREEN WIRE TO ONE OF JUNCTION BOX MOUNTING SCREWS. CONNECT EACH BLACK LEAD WIRE FROM JUNCTION BOX ASSY TO EACH MOTOR POWER INPUT LEAD. CONNECT MOTOR FOR LOW VOLTAGE PER MANUFACTURER'S INSTRUCTIONS ATTACHED TO MOTOR.

10. ATTACH REDUCER VENT PLUGS WITH WIRE TO REDUCER FOR SHIPMENT. INSURE THAT REDUCER IS FILLED PROPERLY WITH LUBRICANT. USE LUBRICANT, ITEM 66, IF NEEDED.

11. ADJUST CLUTCH, ITEM 52, TO 40 FT-LB TORQUE AT STATIC SLIP.

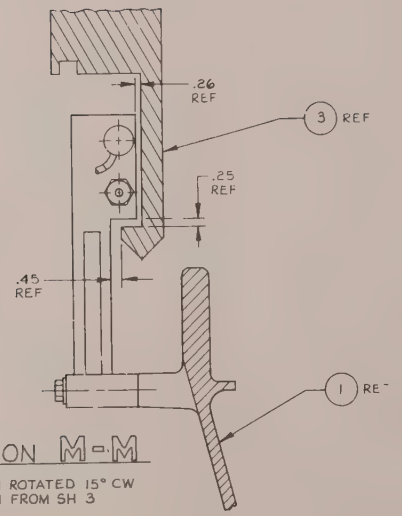
12. TIGTHEN CHAIN SO THAT NO SLACK IS DETECTABLE DURING FEED MOUNTING RING ROTATION.

Figure 2-2. Hub Assembly, Motorized Polarization, 10/11-Meter Antenna Reflector, 268172 (Sheet 5 of 6)



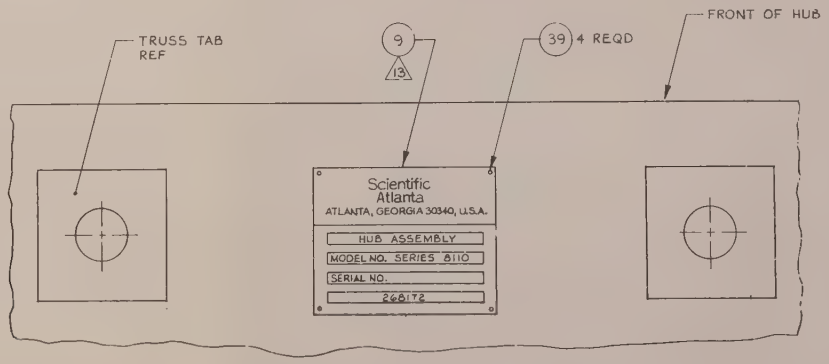
DETAIL J

HUB OMITTED FOR CLARITY
DETAIL ROTATED 15° CW
DETAIL FROM SH 3



SECTION M-M

SECTION ROTATED 15° CW
SECTION FROM SH 3



VIEW L-L

VIEW ROTATED 15° CW
SCALE: 1/1
VIEW FROM SH 3

NOTES:

13 CENTER NAMEPLATE ON HUB FRONT CAP BETWEEN TRUSS TABS. ENTER REQUIRED INFORMATION SHOWN ON NAMEPLATE, INCLUDING NEXT SEQUENTIAL SERIAL NUMBER.

Figure 2-2. Hub Assembly, Motorized Polarization, 10/11-Meter Antenna Reflector, 268172 (Sheet 6 of 6)

ASSY NO. 359424	ASSY NO. 359426	ASSY NO. 359425	ASSY NO. 359424	ASSY NO. 359423	ASSY NO. 359422				
MODEL 8111-2A MPFH	MODEL 8111-2A FH	MODEL 8111-2A MPHH	MODEL 8111-2A HH	MODEL 8111-2A MP	MODEL 8111-2A				
1	1	1	1	1		216	88518	NUT, HEX	1/2-13UNC-2B STL ZN PLD
1	1					215	88527	SCREW, HEX HD	1/2-13 X 2 STL ZN PLD
52	52	52	52	52	52	214	88521	WASHER, FLAT	STL ZN PLD
1	1	1			1	213	173856	SCREW, HEX HD	1-8 X 1 1/2 STL ZN PLD
						212			
						211			
						210			
10	10	10	10	10	10	209	88538	WASHER, FLAT	1 IN. STL ZN PLD
9	9	9	9	9	9	208	337874	SCREW, HEX HD	1-8 X 3 3/4 STL ZN PLD
24	24	24	24	24	24	207	71654	PIN, SPRING	3/16 X 1 STL CD PLD
48	48	48	48	48	48	206	73871	WASHER, TAPERED	1/2 STL ZN PLD
48	48	48	48	48	48	205	171011	SCREW, HEX HD	1/2-13 X 3 1/2 STL ZN PLD
260	260	260	260	260	260	204	88876	SCREW, HEX HD	3/8-16 X 1 1/4 STL ZN PLD
32	32	32	32	32	32	203	89739	NUT, HEX	3/8-16UNC-2B STL ZN PLD
624	624	624	624	624	624	202	88520	WASHER, FLAT	3/8 STL ZN PLD
52	52	52	52	52	52	201	88542	SCREW, HEX HD	3/8-16 X 1-1/2 STL ZN PLD
QTY 8-8000	QTY 8-8000	QTY 8-8000	QTY 8-8000	QTY 8-8000	QTY 8-8000	ITEM OR FIND NO.	STOCK NO.	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE

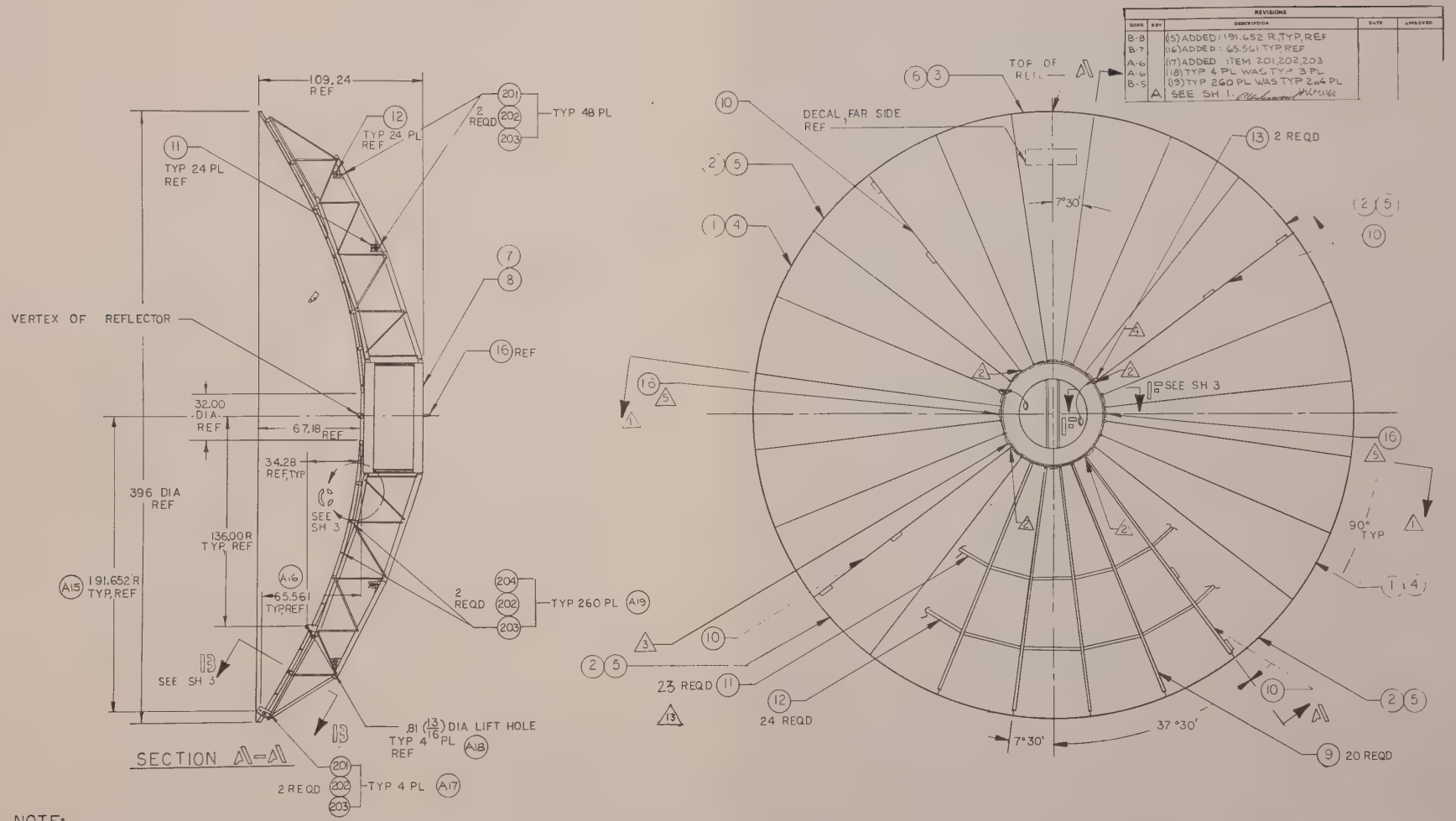
ASSY NO. 359424	ASSY NO. 359426	ASSY NO. 359425	ASSY NO. 359424	ASSY NO. 359423	ASSY NO. 359422			
MODEL 8111-2A MPFH	MODEL 8111-2A FH	MODEL 8111-2A MPHH	MODEL 8111-2A HH	MODEL 8111-2A MP	MODEL 8111-2A			
48	48	48	48	48	48	7	339447	SLEEVE
2	2	2	2	2	2	16	268815	ALIGNMENT SCREW
						15		
1	1	1				14	268703	GROUND ASSY
2	2	2	2	2	2	3	268544	LANYARD ASSY
24	24	24	24	24	24	2	136886	BRACE, LONG
23	23	23	23	23	23	1	136887	BRACE, SHORT
4	4	4	4	4	4	10	364346	SPAR, TRUSS
20	20	20	20	20	20	9	364345	TRUSS
1	0	1	0		1	8	268172	HUB ASSY, MOTORIZED POLARIZATION
0	1	0	1	0		7	268171	HUB ASSY MANUAL POLARIZATION
1	1	0	0	0	0	6	260690	HEATED DECAL PANEL ASSY
4	4	2	2	0	0	5	260689	HEATED SPAR PANEL ASSY
19	19	10	10	0	0	4	260687	HEATED PANEL ASSY
0	0	1	1	1	1	3	260688	DECAL PANEL ASSY
0	0	2	2	4	4	2	341902	SPAR PANEL ASSY
0	0	9	9	19	19	1	341790	PANEL ASSY
QTY 8-8000	QTY 8-8000	QTY 8-8000	QTY 8-8000	QTY 8-8000	QTY 8-8000	ITEM OR FIND NO.	STOCK NO.	NOMENCLATURE OR DESCRIPTION

PARTS LIST

MOTORIZED POLARIZATION FULL HEATED	MANUAL POLARIZATION FULL HEATED	MOTORIZED POLARIZATION HALF HEATED	MANUAL POLARIZATION HALF HEATED	MOTORIZED POLARIZATION NOT HEATED	MANUAL POLARIZATION NOT HEATED
1 THRU 5 SEE SH 2.					
6 THRU 9 SEE SH 3.					
10 SEE SH 4.					
11 STL CD PLD IS ABBREVIATION FOR STEEL CADMIUM PLATED. STL ZN PLD IS STEEL ZINC PLATED.					
12. FOR INCREASED CORROSION RESISTANCE, ALL FASTENERS ARE TO BE COATED WITH WHITE PAINT, EQUIVALENT TO RUSTOLEUM NO. 2764, AFTER FINAL TIGHTENING.					
13 SEE SH 2.					

NOTE:

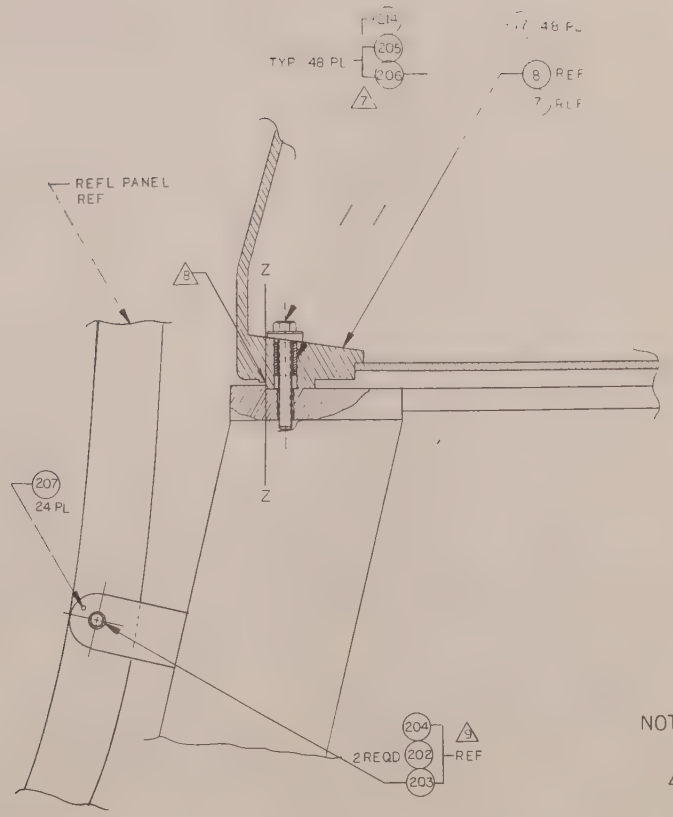
Figure 2-3. Reflector Installation, 10-Meter Antenna Reflector - Model 8111-2A, 359422-359427 (Sheet 1 of 4)



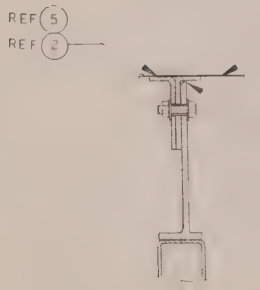
NOTE:

1. LOCATE HEATED PANELS ON HALF HEATED REFLECTOR AS SHOWN.
2. BLACK PAD ON HUB FOR SPAR TRUSS, ITEM 10.
3. INSURE HUB ORIENTATION IS AS SHOWN WITH THE HUB MTG LUGS AT PROPER ORIENTATION WITH THE DECAL PANEL. VIEW SHOWN IS AS IT LOOKS AT 0° ELEVATION ANGLE.
13. SHORT BRACE, ITEM 11, NOT USED BETWEEN TOP DECAL PANEL TRUSSES
4. LOOP COVER SAFETY LANYARDS AROUND NEAREST TRUSS, TYP 2 PL.
5. INSTALL ALIGNMENT SCREWS FOR REFLECTOR MOUNTING. AFTER 3 MOUNTING SCREWS HAVE BEEN INSTALLED, THE ALIGNMENT SCREWS SHALL BE REMOVED AND REPLACED WITH MOUNTING SCREWS.

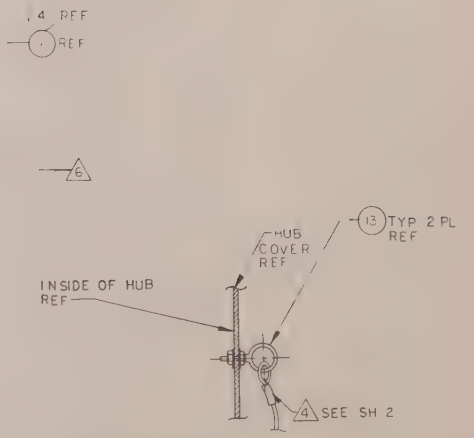
Figure 2-3. Reflector Installation, 10-Meter Antenna Reflector - Model 8111-2A, 359422-359427 (Sheet 2 of 4)



DETAIL C



SECTION B-B

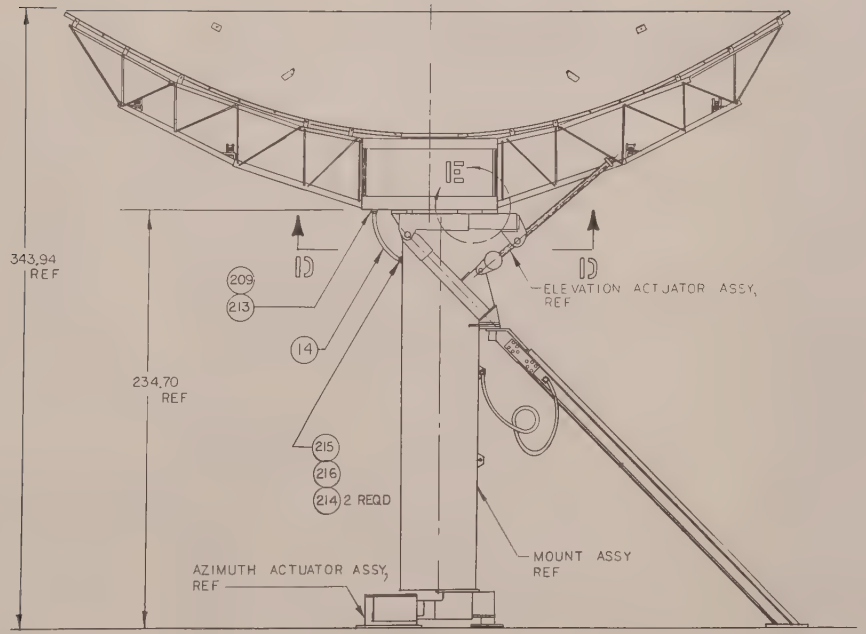


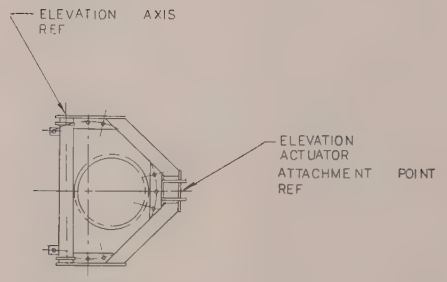
SECTION A-A
VIEW ROTATED 90° CCW

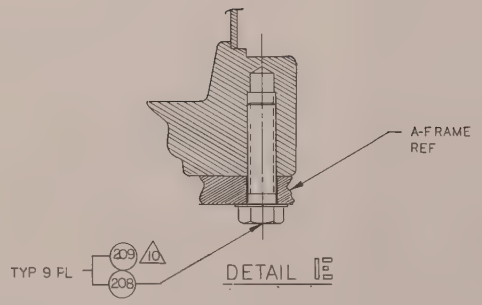
NOTE:

6. INSURE THAT REFLECTOR PANELS ARE SEATED AGAINST TRUSS TAB ROUNDED SURFACES BEFORE TIGHTENING PANEL MOUNTING SCREWS.
7. PROPER ORIENTATION OF TAPERED WASHER IS WITH THICKEST SECTION TOWARDS CENTER OF HUB. TORQUE TRUSS MOUNTING SCREWS TO 75FT-LBS.
8. SEAT TRUSS MOUNTING TAB STEP AGAINST MACHINED STEPS ON HUB AT 24 LOCATIONS SUCH THAT NO GAP REMAINS AT INTERFACE SURFACE Z-Z.
9. TORQUE PANEL ATTACHMENT SCREWS TO 30FT-LBS.

Figure 2-3. Reflector Installation, 10-Meter Antenna Reflector - Model 8111-2A, 359422-359427 (Sheet 3 of 4)







NOTE: 10 TORQUE REFLECTOR MOUNTING SCREWS, ITEM 208, TO 350-375 FT-LBS. AT LEAST 2.5 INCHES OF THREAD ENGAGEMENT IS REQUIRED FOR PROPER HUB MOUNTING.

Figure 2-3. Reflector Installation, 10-Meter Antenna Reflector - Model 8111-2A, 359422-359427 (Sheet 4 of 4)

ASSY NO. 359437	ASSY NO. 359436	ASSY NO. 359435	ASSY NO. 359434	ASSY NO. 359433	ASSY NO. 359432				
MODEL 8114-2A MPFH	MODEL 8114-2A FH	MODEL 8114-2A MPHH	MODEL 8114-2A HH	MODEL 8114-2A MP	MODEL 8114-2A				
1	1	1	1	1	1	216	71518	NUT, HEX	$\frac{1}{2}$-13UNC-2B STL CD PLD
1	1	1	1	1	1	215	72655	SCREW, HEX HD	$\frac{1}{2}$-13 X 2 STL CD PLD
2	2	2	2	2	2	214	73286	WASHER, FLAT	$\frac{1}{2}$ STL CD PLD
1	1	1	1	1	1	213	34623	SCREW, HEX HD	1-8 X 1$\frac{1}{2}$ STL CD PLD
						212			
						211			
						210			
10	10	10	10	10	0	209	73296	WASHER, FLAT	1 IN. STL CD PLD
9	9	9	9	9	9	208	268464	SCREW, HEX HD	1-8 X 3$\frac{3}{4}$ STL CD PLD
24	24	24	24	24	24	207	71654	PIN, SPRING	$\frac{3}{16}$ X 1 STL CD PLD
48	48	48	48	48	48	206	76434	WASHER, TAPERED	$\frac{1}{4}$ STL CD PLD
48	48	48	48	48	48	205	72735	SCREW, HEX HD	$\frac{1}{4}$-10 X 3$\frac{1}{2}$ STL CD PLD
312	312	312	312	312	312	204	72584	SCREW, HEX HD	$\frac{3}{8}$-16 X 1$\frac{1}{4}$ STL CD PLD
360	360	360	360	360	360	203	71513	NUT, HEX	$\frac{3}{8}$-16UNC-2B STL CD PLD
720	720	720	720	720	720	202	73282	WASHER, FLAT	$\frac{3}{8}$ STL CD PLD
48	48	48	48	48	48	201	75829	SCREW, HEX HD	$\frac{3}{8}$-16 X 1$\frac{1}{2}$ STL CD PLD
QTY 8120	QTY 8120	QTY 8120	QTY 8120	QTY 8120	QTY 8120	ITEM OR FIND NO	6-8 STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE (11)

ASSY NO. 359437	ASSY NO. 359436	ASSY NO. 359435	ASSY NO. 359434	ASSY NO. 359433	ASSY NO. 359432				
MODEL 8114-2A MPFH	MODEL 8114-2A FH	MODEL 8114-2A MPHH	MODEL 8114-2A HH	MODEL 8114-2A MP	MODEL 8114-2A				
2	2	2	2	2	2	16	268815	ALIGNMENT SCREW	
						15			
1	1	1	1	1	1	14	268703	GROUND ASSY	
2	2	2	2	2	2	13	268544	LANYARD ASSY	
24	24	24	24	24	24	12	136886	BRACE, LONG	
23	23	23	23	23	23	11	136887	BRACE, SHORT	
4	4	4	4	4	4	10	153040	SPAR TRUSS	
20	20	20	20	20	20	9	153039	TRUSS	
1	0	1	0	1	0	8	268172	HUB ASSY, MOTORIZED POLARIZATION	
0	1	0	1	0		7	268171	HUB ASSY, MANUAL POLARIZATION	
1	1	0	0	0	0	6	260941	HEATED DECAL PANEL ASSY	
4	4	2	2	0	0	5	260699	HEATED SPAR PANEL ASSY	
19	19	1	1	0	0	4	260698	HEATED PANEL ASSY	
0	0	1	1	1	1	3	260940	DECAL PANEL ASSY	
0	0	2	2	4	4	2	153021	SPAR PANEL ASSY	
0	0	9	9	19	19	1	153020	PANEL ASSY	
QTY 8120	QTY 8120	QTY 8120	QTY 8120	QTY 8120	QTY 8120	ITEM OR FIND NO	6-8 STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE

PARTS LIST

MOTORIZED POLARIZATION FULL HEATED

MANUAL POLARIZATION FULL HEATED

MOTORIZED POLARIZATION HALF HEATED

MANUAL POLARIZATION HALF HEATED

MOTORIZED POLARIZATION NOT HEATED

MANUAL POLARIZATION NOT HEATED

NOTE:

(1) THRU (5) SEE SH 2.

(6) THRU (9) SEE SH 3.

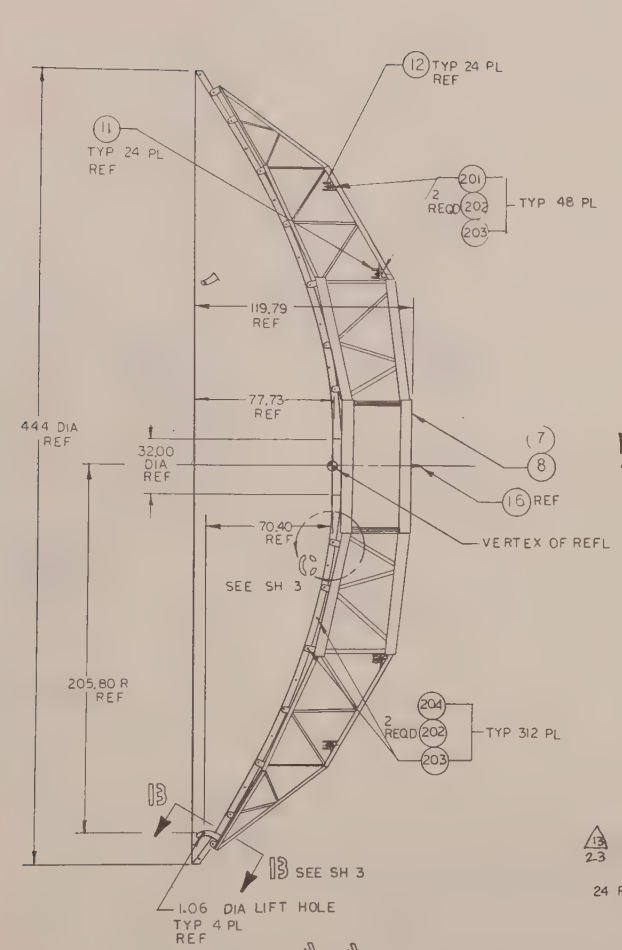
(10) SEE SH 4.

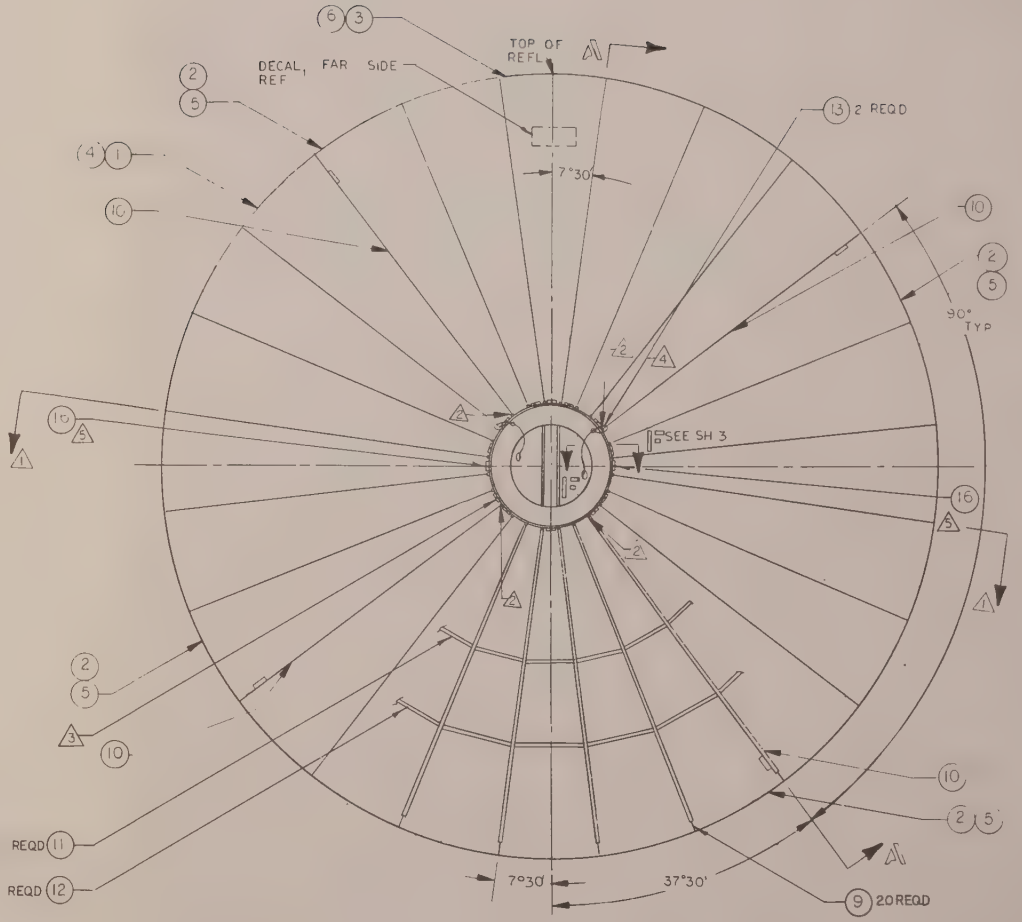
(11) STL CD PLD IS ABBREVIATION FOR STEEL, CADMIUM PLATED.

12. FOR INCREASED CORROSION RESISTANCE, ALL FASTENERS ARE TO BE COATED WITH WHITE PAINT, EQUIVALENT TO RUSTOLEUM NO. 2764, AFTER FINAL TIGHTENING.

(13) SEE SH 2

Figure 2-4. Reflector Installation, 11-Meter Antenna Reflector - Model 8114-2A, 359432-359437 (Sheet 1 of 4)

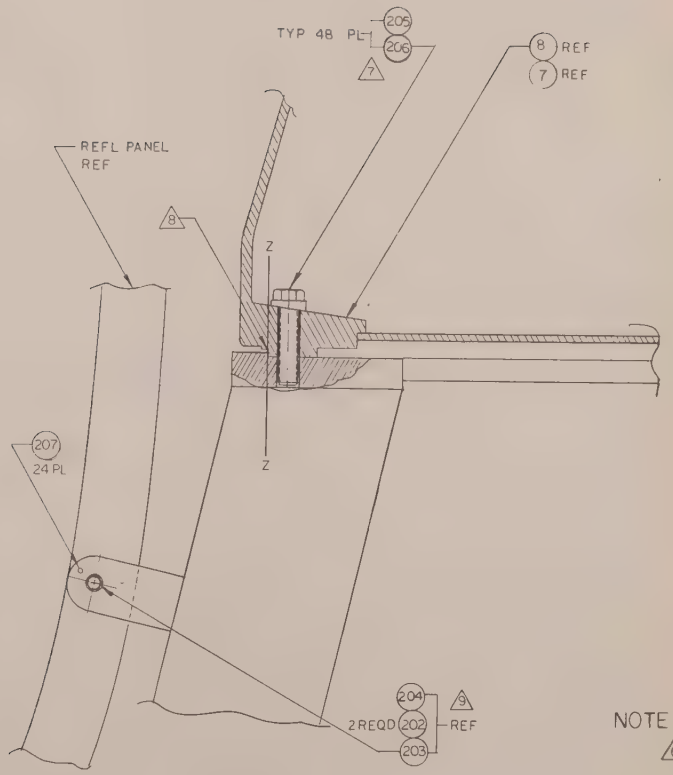




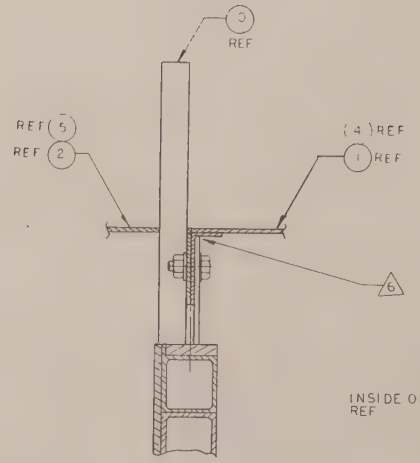
NOTE:

1. LOCATE HEATED PANELS ON HALF HEATED REFLECTOR AS SHOWN.
2. BLACK PAD ON HUB FOR SPAR TRUSS, ITEM 10.
3. INSURE HUB ORIENTATION IS AS SHOWN WITH THE HUB MTG LUGS AT PROPER ORIENTATION WITH THE DECAL PANEL. VIEW SHOWN IS AS IT LOOKS AT 0° ELEVATION ANGLE.
13. SHORT BRACE, ITEM 11, NOT USED BETWEEN TOP DECAL PANEL TRUSSES
4. LOOP COVER SAFETY LANYARDS AROUND NEAREST TRUSS, TYP 2 PL.
5. INSTALL ALIGNMENT SCREWS FOR REFL MOUNTING. AFTER 3 MOUNTING SCREWS HAVE BEEN INSTALLED, THE ALIGNMENT SCREWS SHALL BE REMOVED AND REPLACED WITH MOUNTING SCREWS.

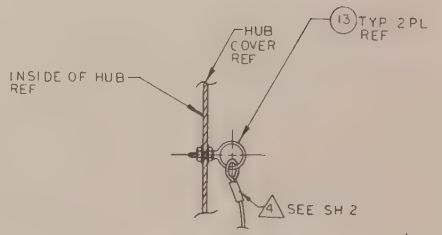
Figure 2-4. Reflector Installation, 11-Meter Antenna Reflector - Model 8114-2A, 359432-359437 (Sheet 2 of 4)



DETAIL C



SECTION 13-13

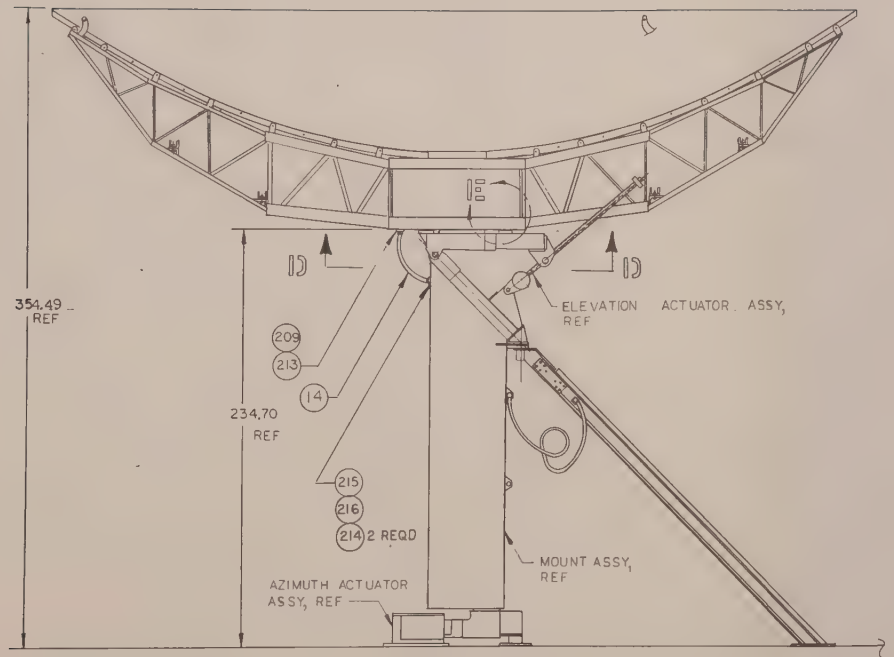


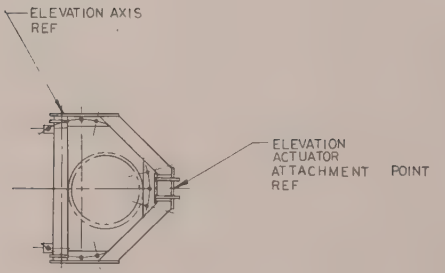
SECTION 15-15
VIEW ROTATED 90°CCW

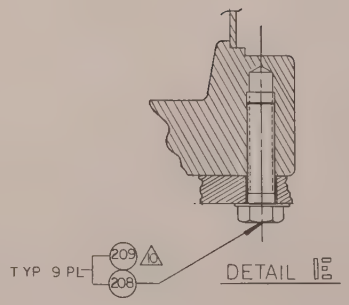
NOTE:

6. INSURE THAT REFLECTOR PANELS ARE SEATED AGAINST TRUSS TAB ROUNDED SURFACES BEFORE TIGHTENING PANEL MOUNTING SCREWS.
7. PROPER ORIENTATION OF TAPERED WASHER IS WITH THICKEST SECTION TOWARDS CENTER OF HUB. TORQUE TRUSS MOUNTING SCREWS TO 175 FT-LBS.
8. SEAT TRUSS MOUNTING TAB STEP AGAINST MACHINED STEPS ON HUB AT 24 LOCATIONS SUCH THAT NO GAP REMAINS AT INTERFACE SURFACE Z-Z.
9. TORQUE PANEL ATTACHMENT SCREWS TO 30FT-LBS.

Figure 2-4. Reflector Installation, 11-Meter Antenna Reflector - Model 8114-2A, 359432-359437 (Sheet 3 of 4)







NOTE:
10 TORQUE REFLECTOR MOUNTING SCREWS, ITEM 208, TO 350-375 FT-LBS. AT LEAST 2.5 INCHES OF THREAD ENGAGEMENT IS REQUIRED FOR PROPER HUB MOUNTING.

Figure 2-4. Reflector Installation, 11-Meter Antenna Reflector - Model 8114-2A, 359432-359437 (Sheet 4 of 4)

This section of the manual provides instructions for installation and maintenance of the Model 8223 10-Meter Feed and Model 8224 11-Meter Feed. The feed is a high-efficiency circular waveguide corrugated horn radiator with provisions for mounting in the reflector center hub. Bearings in the hub enable the feed to rotate around its axis and provide polarization adjustment. An orthomode transducer at the rear of the feed assembly provides orthogonally polarized 4-GHz and 6-GHz operation.

The radiating element for the Model 8223 or Model 8224 Feeds are a circular waveguide corrugated horn. The horn provides axial pattern symmetry making it virtually frequency independent across both the 3.7 to 4.2 GHz and 5.925 to 6.425 bands. The feed horn provides both linear and circular, receive/transmit capabilities. The horn provides a circular waveguide output that couples directly to a polarizer. There are two polarizers available, one for linear polarization and another for circular polarization. The polarizer requirements are determined prior to shipment and are factory installed and adjusted.

LINEAR POLARIZATION

If linear polarization is required, a polarizer utilizing a straight section of circular waveguide and an axial ratio compensator will be supplied. The axial ratio compensator compensates for the cross-polarization effects caused by the irregularities and the ellipticity usually found in circular waveguide. This linear polarizer proves excellent cross-polarization characteristics, which are basic requirements for simultaneous vertical horizontal, receive/transmit operation.

CIRCULAR POLARIZATION

If circular polarization is required, a straight section of circular waveguide equipped with special fins are placed 45^{o} to the theoretical E-Vector. These fins delay phase by approximately 90^{o} and hold the amplitude essentially constant, therefore, providing circular polarization. The circular polarizer has been installed by the factory and should not be taken off or turned around in the transmission line.

Both the linear and circular polarizers are coupled to an orthomode transducer to obtain orthogonal transmit/receive polarizations. The transducer is a junction in which two rectangular waveguides excite orthogonal dominant modes. The two rectangular waveguides are physically displaced 90^{o} from each other and are matched to the circular polarizer. Tuning screws in each waveguide port are used to achieve the lowest possible impedance match across both frequency bands.

The Model 8223 and Model 8224 Feeds provide circular symmetric illumination of the 10-meter or 11-meter dual reflector in both the receive and transmit frequency bands.

GENERAL

This portion of the manual provides instructions for installation of Model 8223 and Model 8224 Feeds.

UNPACKING AND INSPECTION

Exercise caution when unloading and unpacking the equipment. Carefully open the crate and inspect the contents for shipping damage. If a claim for damage is to be made, save the packing material and crate to substantiate the claim. File the claim with the carrier and notify the local Scientific-Atlanta sales office immediately. Do not return units until shipping instructions have been received from the factory.

After all units have been removed from the crate, check all packing for smaller items and compare the units received against the packing list.

NOTE

A crane will be required to lift the feed into place. The crane should be capable of lifting 500 lbs and work at heights of approximately forty feet.

FEED INSTALLATION

When the 10-Meter or 11-Meter main reflector installation has been completed and the reflector is at zenith (90° elevation), install the feed using the following procedure. (Refer to the applicable drawings and parts lists at the end of this section.)

NOTE

A qualified supervisor must be on site at all times to be responsible for the safety of the personnel.

a. With one person inside the hub and one person inside the reflector, carefully lift the feed up inside the reflector.

CAUTION

Do not stand or walk inside the no-step circle on the reflector to prevent damage to panels.

NOTE

The Feed Assembly weighs approximately 500 lbs.

b. Attach feed to feed mounting plate using 5/16-fasteners (see figure 3-1 or figure 3-2).

FEED CONNECTIONS

Attach the feed to the antenna systems by connecting the respective transmit and receive ports (see figure 3-3), ~~using the following procedure.~~

NOTE

Proper care should be taken to insure that gaskets are properly placed between the flanges. Apply silicone, Dow Corning No. 6, to the gasket to make installation easier and to insure a complete seal.

GENERAL

The Model 8223 and Model 8224 Feeds are practically maintenance free. Only periodic inspection every 90 days is required.

Inspect the radome for moisture, dirt and other foreign materials. If present, clean as follows:

a. Use a clean, lint-free cloth lightly moistened with a diluted solution of mild soap and water to remove foreign material from the radome. Wipe dry using a clean, dry lint-free cloth.

b. Remove dust from accessible areas.

Inspect feed for dents, distortions and bends.

RECOMMENDED SPARES

The following are recommended spares.

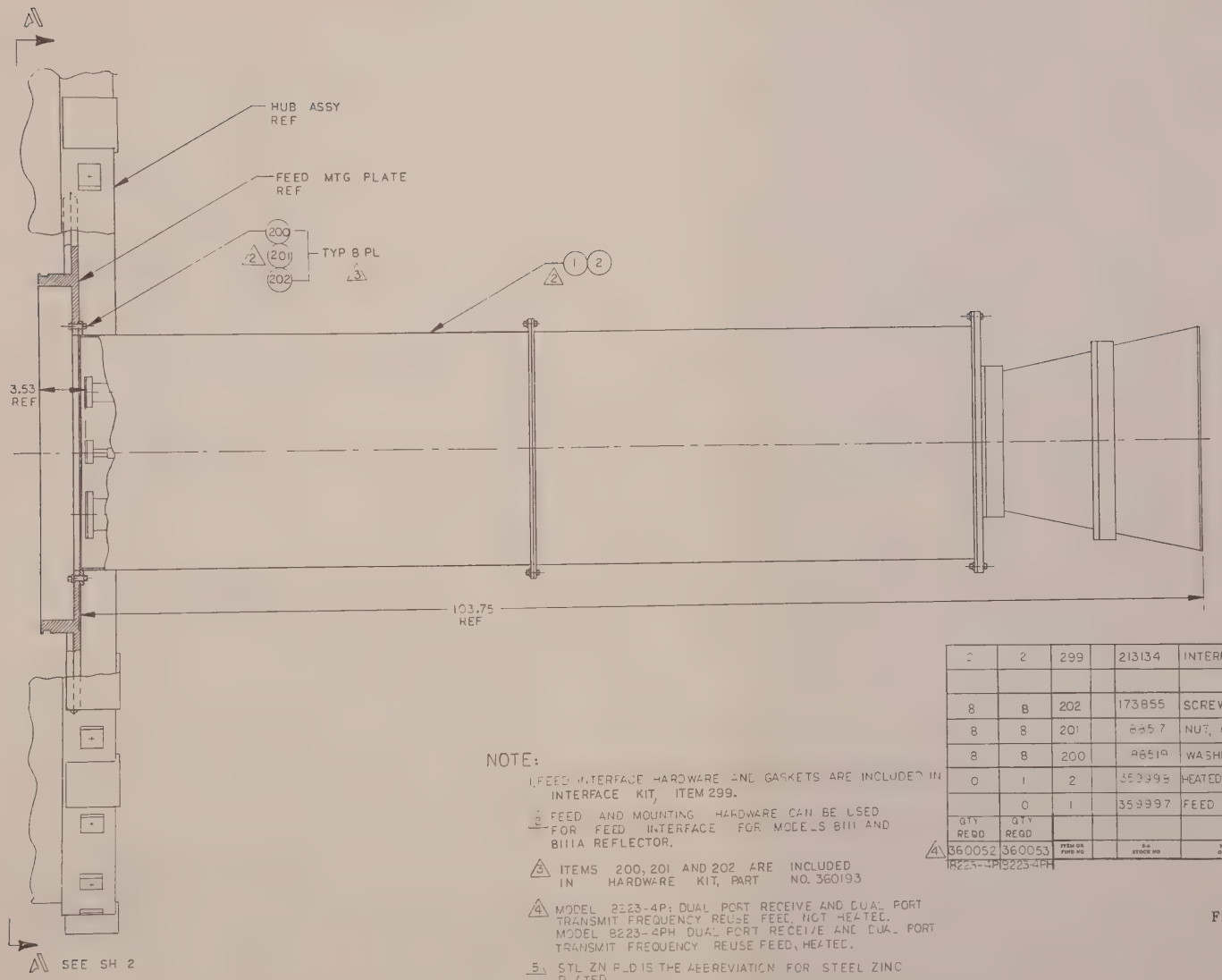
S-A Stock No.	Description	Qty
150881	Radome	2
80562	Plyflow Turning, 1/4-inch O.D.	4 ft
117715	Gasket, CPR 229	2
117713	Gasket, CPR 137	2

INTRODUCTION

Drawings pertaining to the Model 8223 and Model 8224 Feeds are located in this section. Replacement parts are identified on the assembly drawings. Table 3-1 is a listing of the assembly drawings by number.

Table 3-1. Assembly Drawing Index

Drawing No.	Title	Figure No.
360052 through 360053	Feed Mounting Instl., 10-Meter Antenna Model 8223-4P and 8223-4PH	3-1
35972 through 359273	Feed Mounting Instl., 11-Meter Antenna Model 8224 DPC and 8224 DPCH	3-2
	Feed Connections	3-3



0	2	299		213134	INTERFACE KIT			
8	8	202		173855	SCREW, HEX HD	$\frac{5}{16}$-18 X $1\frac{1}{2}$ STL ZN PLD		
8	8	201		8857	NUT, HEX	$\frac{5}{16}$-18 STL ZN PLD		
8	8	200		88519	WASHER, FLAT	$\frac{5}{8}$ STL ZN PLD		
0	1	2		359995	HEATED FEED ASSY			
	0	1		359997	FEED ASSEMBLY			
QTY REQD	QTY REQD	ITEM OR FIND NO		F-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE 5	IDENTIFYING OR PART NO	FROM NO.
4 360052 8223-4P	360053 8223-4PH							

PARTS LIST

NOTE:

1. FEED INTERFACE HARDWARE AND GASKETS ARE INCLUDED IN INTERFACE KIT, ITEM 299.
2. FEED AND MOUNTING HARDWARE CAN BE USED FOR FEED INTERFACE FOR MODELS 8111 AND 8111A REFLECTOR.
3. ITEMS 200, 201 AND 202 ARE INCLUDED IN HARDWARE KIT, PART NO. 360193
4. MODEL 8223-4P: DUAL PORT RECEIVE AND DUAL PORT TRANSMIT FREQUENCY REUSE FEED, NOT HEATED. MODEL 8223-4PH DUAL PORT RECEIVE AND DUAL PORT TRANSMIT FREQUENCY REUSE FEED, HEATED.
5. STL ZN PLD IS THE ABBREVIATION FOR STEEL ZINC PLATED.

Figure 3-1. Feed Mounting Installation, 10-Meter Antenna - Model 8223-4P and 8223-4PH, 360052-360053 (Sheet 1 of 3)

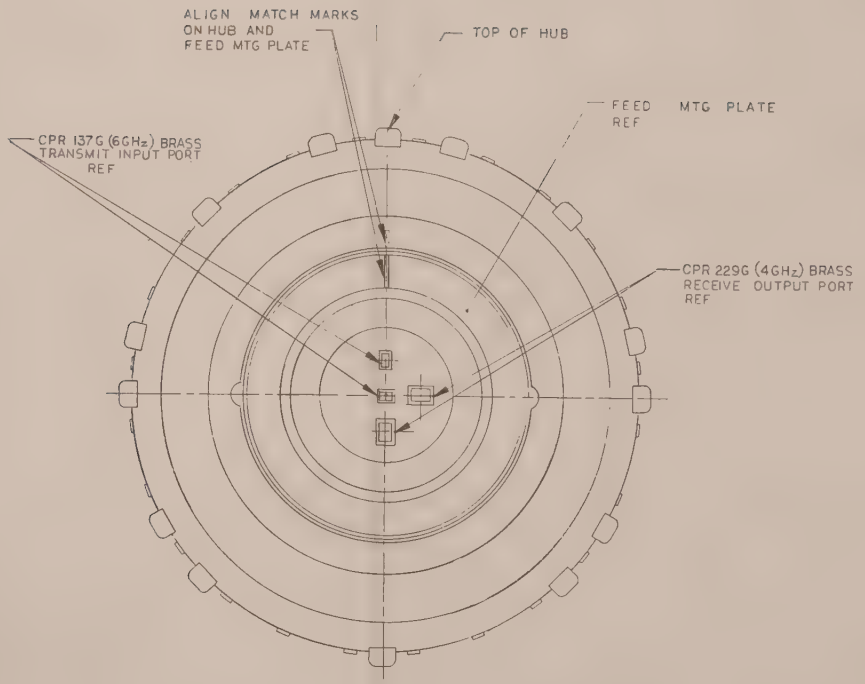
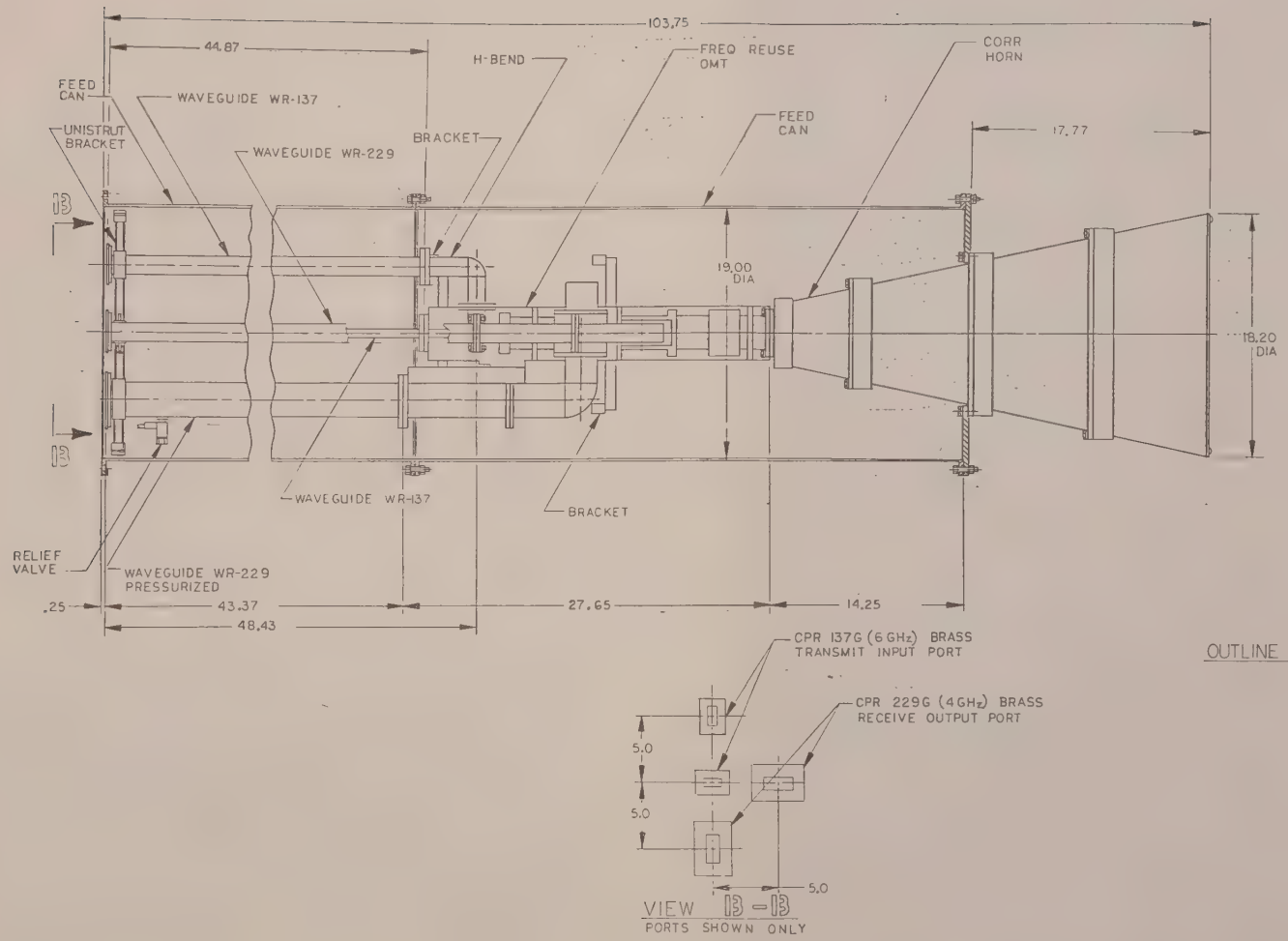
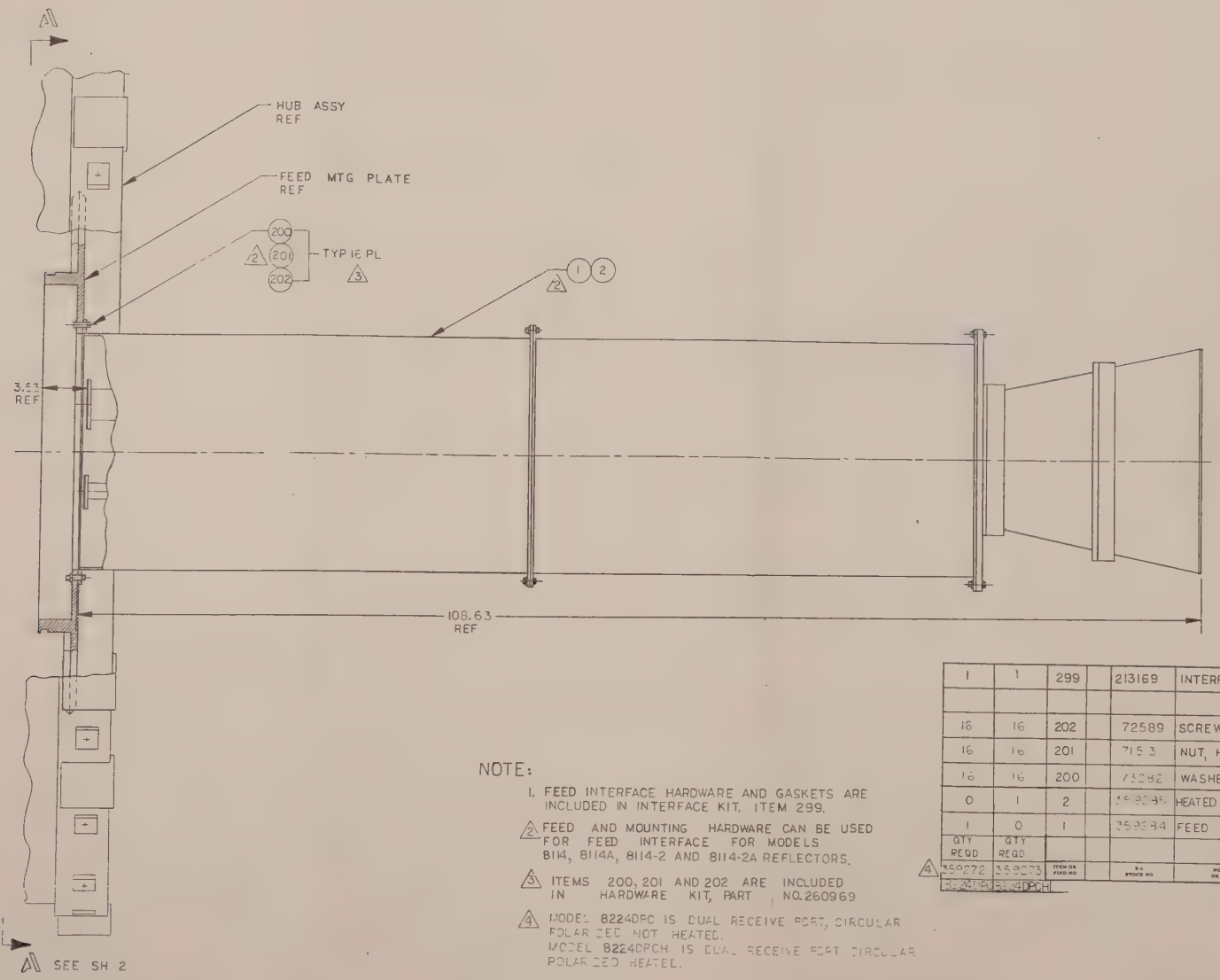

ALIGN MATCH MARKS ON HUB AND FEED MTG PLATE
TOP OF HUB
FEED MTG PLATE REF
CPR 137G (6GHz) BRASS TRANSMIT INPUT PORT REF
CPR 229G (4GHz) BRASS RECEIVE OUTPUT PORT REF
VIEW A - A

Figure 3-1. Feed Mounting Installation, 10-Meter Antenna - Model 8223-4P and 8223-4PH, 360052-360053 (Sheet 2 of 3)



OUTLINE DIMENSIONS

Figure 3-1. Feed Mounting Installation, 10-Meter Antenna - Model 8223-4P and 8223-4PH, 360052-360053 (Sheet 3 of 3)



NOTE:

1. FEED INTERFACE HARDWARE AND GASKETS ARE INCLUDED IN INTERFACE KIT, ITEM 299.
2. FEED AND MOUNTING HARDWARE CAN BE USED FOR FEED INTERFACE FOR MODELS 8114, 8114A, 8114-2 AND 8114-2A REFLECTORS.
3. ITEMS 200, 201 AND 202 ARE INCLUDED IN HARDWARE KIT, PART NO. 260969
4. MODEL 8224DPC IS DUAL RECEIVE PORT, CIRCULAR POLARIZED, NOT HEATED.
   MODEL 8224DPCH IS DUAL RECEIVE PORT CIRCULAR POLARIZED, HEATED.

QTY REQD	QTY REQD	ITEM OR FIND NO		D-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING NO OR PART NO	FSCM NO
1	1	299		213169	INTERFACE KIT			
16	16	202		72589	SCREW, HEX HD	$\frac{3}{8}$-16 X 1$\frac{3}{4}$ STEEL CADMIUM PLATED		
16	16	201		7153	NUT, HEX	$\frac{3}{8}$-16 STEEL CADMIUM PLATED		
16	16	200		73282	WASHER, FLAT	$\frac{3}{4}$ STEEL CADMIUM PLATED		
0	1	2		359284	HEATED FEED ASSY			
1	0	1		359284	FEED ASSEMBLY			
4 359272	359273							

PARTS LIST

Figure 3-2. Feed Mounting Installation, 11-Meter Antenna - Model 8224 DPC and 8224 DPCH, 359272-359273 (Sheet 1 of 2)

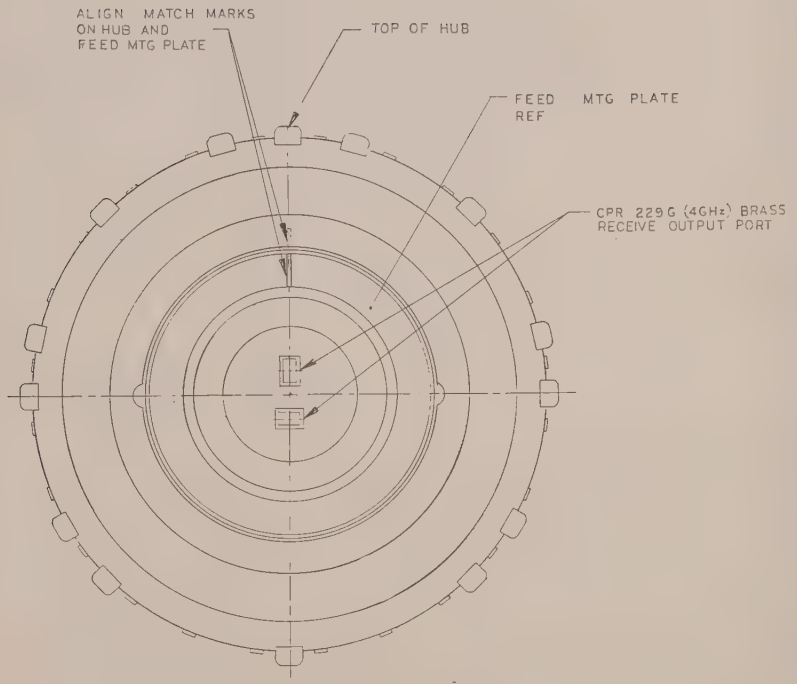
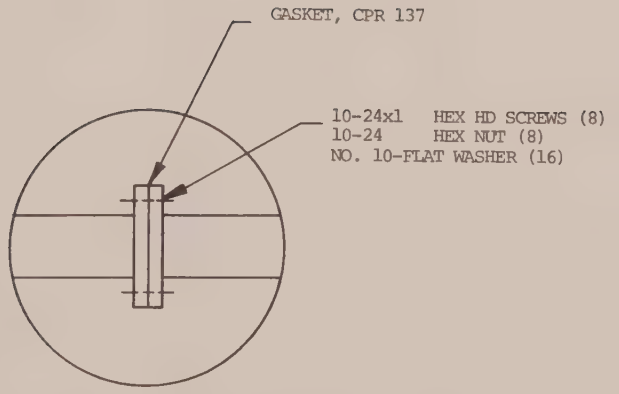
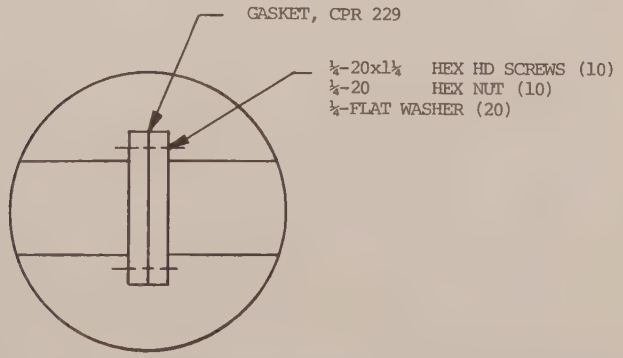


Figure 3-2. Feed Mounting Installation, 11-Meter Antenna - Model 8224 DPC and 8224 DPCH, 359272-359273 (Sheet 2 of 2)



TYPICAL TRANSMIT WR 137 WAVEGUIDE CONNECTION



TYPICAL RECEIVE WR 229 WAVEGUIDE CONNECTION

Figure 3-3. Feed Connections, 10/11-Meter Antenna

This section of the manual provides instructions for assembly, installation, and maintenance of the Model 8223 and Model 8224 Subreflectors.

Any components or options that would be supplied with specific Series 8000 Earth Terminal will be covered in the system manual.

The procedures outlined in this and other manuals, comprising the system, are interrelated in many areas. Therefore, it is very important that the procedures covering all aspects of the entire earth terminal be thoroughly understood as a complete and integral unit. Close adherence to this recommendation will enable work to proceed quickly and smoothly in a safe, professional manner.

The Model 8223 and 8224 Subreflectors have been designed in accordance with the Aluminum Construction Manual-Specifications for Aluminum Structures (Third Edition, April 1976), published by the Aluminum Association.

Specifications for the Model 8223 Subreflector are presented in table 4-1.

Table 4-1. Model 8223 Subreflector Assembly Technical Specifications

Characteristic	Specification
Size	48-inch-diameter, specially-shaped surface
Weight, Subreflector and Spars	350 pounds
Surface Tolerance	0.005-inch, rms
Survival Wind Velocities	125 mi/h with no ice accumulation. 87 mi/h with 2 inches radial solid ice accumulation.
Shipping Data	
Shipping Volume	188 cubic feet
Shipping Weight	1,200 pounds

Specifications for the Model 8224S, 11-Meter Subreflector are presented in table 4-2.

Table 4-2. Model 8224 Subreflector Assembly Technical Specifications

Characteristic	Specification
Size	52-inch-diameter, specially-shaped surface
Weight, Subreflector and Spars	360 pounds
Surface Tolerance	0.005 inch, rms
Survival Wind Velocities	125 mi/h with no ice accumulation. 87 mi/h with 2 inches radial solid ice accumulation.
Shipping Data	
Shipping Volume	190 cubic feet
Shipping Weight	1,300 pounds

GENERAL

This portion of the manual provides assembly and installation instructions for the Models 8223 and 8224 Subreflectors.

The easiest and preferred method of assembly is to assemble the subreflector on the ground and lift it by crane onto the reflector for installation. However, if a crane is not available, the subreflector can be assembled atop the reflector. With this method, the subreflector parts are lifted and assembled one item at a time.

NOTE

Scientific-Atlanta, Inc., recommends that the Earth Terminal be assembled with the use of a suitable crane. A 20-ton crane with an 80-foot boom will be required.

CAUTION

All personnel atop the mount must use safety belts. Two recommended safety belt attachment points are:

1. The upper frame area of antenna mount.

2. A properly attached truss.

UNPACKING AND INSPECTION

Exercise caution when unloading and unpacking the equipment. Carefully open the crates and inspect the contents for shipping damage. If a claim for damage is to be made, save the packing material and crate to substantiate the claim. File the claim with the carrier and notify the local Scientific-Atlanta sales office immediately. Do not return units until shipping instructions have been received from the factory.

After all units have been removed from the crate, check all packing for smaller items and compare the units received against the packing list.

Do not attempt to assemble any of the subreflector assembly unless all the items and their proper quantities have been accounted for and have not been damaged during shipment.

Cleanliness of the precision mating parts that make up the subreflector assembly is essential to proper fit and reflector surface accuracy.

DETAILED SUBREFLECTOR INSTALLATION INSTRUCTIONS

The installation instructions will not be made complex by attempting to cover the specific hardware required. This information is supplied on the applicable drawings at the end of this section. These drawings contain additional installation data and typical section views.

The drawings included show the Subreflector assemblies with the deicing option applied and thus have a model number suffix of "H". The standard non-deiced subreflectors assemble the same way as the deiced subreflectors. Detailed instructions on wiring and connections of the deice equipment are provided in the deice systems manuals.

The subreflector installation details are presented in three sections:

1. Model 8223 Subreflector 10-Meter Installation
2. Model 8224 Subreflector 11-Meter Installation
3. Subreflector Adjustment, Model 8223 and 8224

MODEL 8223/8224 SUBREFLECTOR INSTALLATION

There are four major parts included in the Model 8223 Subreflector Installation. Refer to Drawing No. 360012-360013 and 359392-359393 for detailed hardware and installation illustrations.

The easiest way to assemble the subreflector is while it is at ground level. Then lift the unit up to the reflector for final installation.

Begin by hoisting the subreflector with a crane high enough to attach the three spars. Raise the spars one at a time and attach them to the subreflector assembly. The spars bolt to the machined notch side of the subreflector support frame. Tighten all the fasteners. Orient the main reflector such that it is in the zenith position; i.e., the reflector aperture pointing straight up. Install the feed prior to mounting the subreflector.

Lift the subreflector and spar assembly up and into the reflector. Bolt each spar end clevis to the counterclockwise or left hand side of the reflector spar truss mounting tabs as viewed from the reflector hub. Tighten all the fasteners.

SUBREFLECTOR INSTALLATION WITH REFLECTOR ATOP THE MOUNT

The following subreflector assembly instructions are to be used if no crane is available and assembly must be done inside the reflector while it is installed atop the mount.

To assemble the subreflector assembly atop the mount, the reflector assembly procedure should be followed except that one panel should be left out. This panel will be installed after the subreflector assembly is in place.

NOTE

The weights of the major portions of the subreflector assembly are as follows:

Subreflector assembly:	160 pounds	
Spar:	+200 pounds	(4 spars at 50 pounds each)
Total Weight:	360 pounds	

a. Detach the subreflector from the support frame by loosening jam nut at all three locations and simultaneously rotating adjustment sleeves, such that the subreflector moves away from the frame.

b. Lift and erect a 10-foot stepladder in the center of the reflector. Orient it so that it will lie undernearth the subreflector backup frame such that its top can support this frame. The feet of the ladder should be equipped with rubber cleated pads or use 1/4-inch-thick plywood pads, one-foot square, under each stepladder foot to protect the reflector panels. Tie the stepladder top to the edge of the reflector using three ropes with an angle of 100 to 145 degrees between them.

All four stepladder feet should be positioned outside the NO-STEP circle.

CAUTION

When handling the subreflector, care should be exercised so as not to damage any machined surface. Any damage to this surface will greatly affect performance.

NOTE

All personnel that walk on the reflector surface must wear rubber-soled shoes, or equivalent, to keep from scratching or marring the reflective paint. Avoid standing inside or inboard of the NO-STEP notice painted on the reflector panels.

d. The stepladder should be positioned so that the frame installation can rest on the top of the stepladder in nearly its final position.

e. Lift the four spars into the reflector.

f. Attach the upper ends of the spars to the subreflector mounting frame using the hardware items.

g. Loosely attach the bottom ends of the spars to the reflector spar attachment tabs protruding through the reflector panels. Use hardware items for attachment. The spar clevis should be located on the left side of the tab, as viewed from inside the hub. Tighten all the fasteners.

NOTE

The spar attachment holes are the inner set of holes on the reflector spar mounting tabs.

h. Attach a hand winch or block and tackle to the subreflector support frame which is now supported by the three spars.

i. Carry the subreflector toward the center of the reflector.

j. Reposition the stepladder, if necessary, to permit installation of the subreflector to its support frame.

k. Secure lifting straps to the subreflector.

l. Hoist the subreflector, align the three mounting screws of the subreflector with the three adjustment sleeves on the support frame.

m. Remove the hoist assembly, stepladder, and protective foot pads.

n. Clean and retouch any marks on scratches on the reflector surfaces.

SUBREFLECTOR ADJUSTMENT, MODEL 8223 AND 8224

The subreflector can be easily readjusted for proper axial position and tilt. The subreflector supporting structure is designed so that no lateral adjustment is necessary. If it becomes necessary to make an adjustment of the subreflector position, refer to the following procedures.

The tools required for subreflector adjustments are:

a. Venier caliper with depth gauge, 7-inch
b. Open-end wrench, 1-1/8-inch
c. Open-end wrench, 15/16-inch
d. Socket wrench, 3/32-inch

Subreflector Axial Position Adjustment

Axial positioning of the subreflector is accomplished by rotation of the sleeves. One full turn of the sleeves moves the subreflector 0.1 inch along the focal axis. Clockwise rotation (viewed facing the main reflector from behind the subreflector and stud) causes the subreflector to move away from the main reflector and towards the near-field focus.

Subreflector Tilt Adjustment

The subreflector tilt can be adjusted for either vertical or horizontal rotation of the subreflector. Both adjustments will be presented. For the following discussion, positions 1, 2 and 3 are taken to be as follows:

Point the reflector at the horizon and view the main reflector from behind the subreflector.

a. Position 1 is the lower adjustment point and lies on the vertical axis.

b. Position 2 is above and to the left of position 1.

c. Position 3 is above and to the right of position 1. A line between positions 2 and 3 will lie parallel to the horizontal axis.

d. Both horizontal and vertical axes intersect at the focal axis.

Tilt about the vertical axis is accomplished by differentially adjusting the sleeves at positions 2 and 3 (position 1 remains fixed). Positions 1, 2 and 3 relate the three mounting studs. A 180 degree clockwise rotation of the sleeve at position 3 and a 180 degree, counterclockwise rotation at position 2 will cause the subreflector to rotate clockwise (when viewed from above) about a vertical axis (when the main reflector is pointing at the horizon) by 0.127 degrees. For small angles, the relationship of sleeve differential rotation and subreflector rotation is approximately linear. Thus, the scale factor of differential sleeve rotation is 142 degrees for each sleeve (in opposite directions) gives 0.1 degree subreflector rotation.

Tilt about the horizontal axis is accomplished by adjusting sleeves at positions 2 and 3 differentially with the sleeve at position 1. If a change in focal distance is to be prevented, then the sleeve at position 1 must be rotated exactly twice as much but in opposite direction to the rotations of sleeves 2 and 3. A 240-degree rotation clockwise of the sleeve at position 1 and 120-degree counterclockwise rotation of each sleeve at positions 2 and 3 will cause the subreflector to rotate its top edge toward the main reflector through an angle of 0.147 degrees. Again, because of the approximately linear relationship of the tangent function at small angles a 0.1 degree rotation of the subreflector about the horizontal axis is achieved by a 164-degree rotation of the sleeve at position 1 and a counter rotation of 82 degrees each of positions 2 and 3.

GENERAL

The following maintenance instructions apply only to the components of the Model 8223 and 8224 subreflectors described in this manual. The maintenance instructions for any special parts, such as those that would be supplied with a particular system, will be covered in a separate manual.

MAINTENANCE INSTRUCTIONS

The subreflector is maintenance free except for keeping the finish in good condition and correcting any corrosion or loose fasteners.

FINISH

Use the following materials and procedure to repair and retouch scratches and other finish problems such as corrosion and flaking.

Materials

Solvent - toluene or naphtha
Detergent - household dishwashing soap
Thinner - XYLENE
Sandpaper - 320 grit wet/dry
Cheesecloth
Paint brush - width, 1-inch
Wash primer - MIL-P-14504
Zinc chromate - Federal Specification TT-P 1757 Composition G
Top coat:
Reflective Surfaces - Hi-Reflective Flat White No. 6

Triangle Paint Company
222 Third Street
Berkeley, CA 94710

Non-Reflective Surfaces - Gloss Finish: Rust-Oleum No. 7792, white
- Flat Finish: Rust-Oleum No. 7790, white

Rust-Oleum Corporation
2301 Oakton Street
Evanston, IL 60204

a. Clean the entire area around the damaged portion with solvent cleaners followed by a thorough wash with detergent and water. Rinse well and dry with clean cheesecloth. Do not recoat for 30 minutes or until surface is completely dry.

b. Damaged coatings may be repaired by fairing the damaged edges with 320 grit or finer sandpaper. Primer system must be reapplied if damage extends into the bare metal.

c. If recoating is to be accomplished in ambient temperatures higher than 100 degrees Fahrenheit, top coating shall be thinned with XYLENE. If coating appears too dry or grainy, add up to 50 percent mineral spirits to slow the evaporation rate.

NOTE

The top coat may be thinned in ratios up to two parts paint to one part thinner.

d. If repriming is required, apply a thin coat of wash primer and allow to dry for 15 to 30 minutes. Apply a full coat of zinc chromate primer and and allow to dry for 2 hours. If surface is not smooth after drying, sand with 320 grit paper lubricated with toluene. Remove dust using a tack cloth (cheesecloth lightly coated with toluene).

FASTENERS

The fasteners need to be checked to make sure they are in place and have not obviously loosened. If a fastener is found to be loose, or there is other cause to check all the fasteners, use a torque wrench to obtain the proper bolt tension. Torque values are given in table 4-3.

If corrosion of a fastener becomes evident, it should be corrected immediately as follows:

a. Determine extent of corrosion. If base material of fastener is corroded, replace with identical size and type. Refer to drawings parts list for fastener size and type.

b. Remove any corrosion from the fastener (if reused) and surrounding area with a wire brush.

c. Clean parts with toluene or naphtha solvent.

d. After fastener is tightened and paint is dry enough to be recoated, spray fastener head, washers and nut with white paint.

In the case of extensive corrosion of a fastener; i.e., the base material is corroded, replace with identical size and type (SAE Grade 5 steel). Refer to drawings parts list.

Table 4-3. Recommended Torque Values*

Bolt Size	Pounds-Feet Torque
1/4 - 20	9
5/16 - 18	18
3/8 - 16	30
7/16 - 14	50
1/2 - 13	75
9/16 - 12	110
5/8 - 11	150
3/4 - 10	260

*For lubricated or CAD plated grade 5 steel bolts.

RECOMMENDED SPARES

There are no recommended spares for the subreflector assemblies. All parts of the subreflector are durable hardware items and designed for a service life in excess of 15 years.

INTRODUCTION

Drawings pertaining to the Model 8223 and Model 8224 Subreflectors are located in this section. Replacement parts are identified on the assembly drawings. Table 4-4 is a listing of the assembly drawings by number.

Table 4-4. Assembly Drawing Index

Drawing No.	Title	Figure No.
360012 through 360013	Model 8223S and 8223SH 10-Meter Antenna, Subreflector Installation	4-1
359392 through 359393	Model 8224S and 8224SH 11-Meter Antenna, Subreflector Installation	4-2

NOTES:

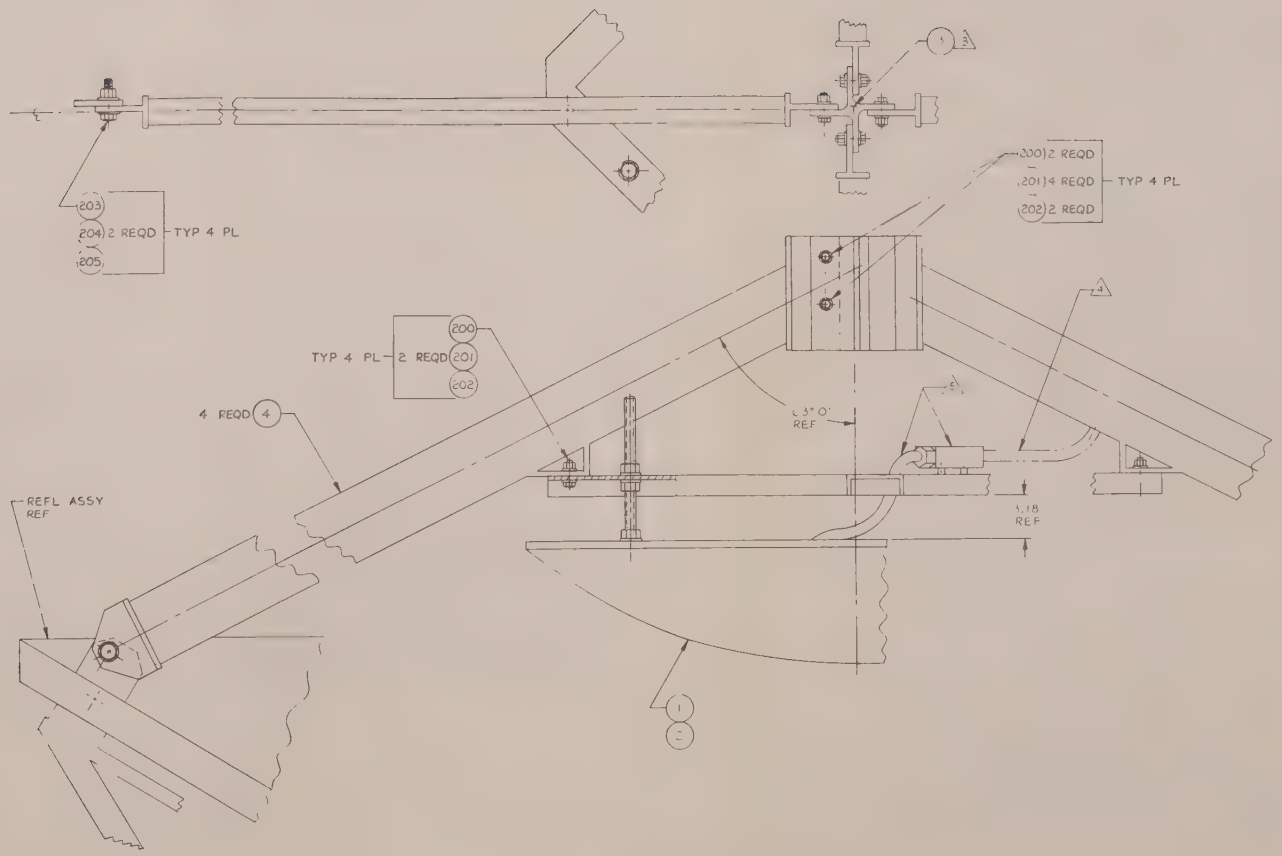
1. STL ZN PLD IS THE ABBREVIATION FOR STEEL ZINC PLATED.
2. FOR INCREASED CORROSION RESISTANCE, ALL FASTENERS ARE TO BE COATED WITH WHITE PAINT, EQUIVALENT TO RUSTOLEUM NO. 2764, AFTER FINAL TIGHTENING.

3 THRU 5 SEE SHEET 2.

4	4	205		88532	NUT, HEX	$\frac{3}{4}$-10 STL ZN PLD		
8	8	204		88537	WASHER, FLAT	$\frac{3}{4}$ STL ZN PLD		
4	4	203		88855	SCREW, HEX HD	$\frac{3}{4}$-10 x 2$\frac{3}{4}$ STL ZN PLD		
12	12	202		88518	NUT, HEX	$\frac{1}{2}$-13 STL ZN PLD		
24	24	201		88521	WASHER FLAT	$\frac{1}{2}$ STL ZN PLD		
12	12	200		88515	SCREW HEX HD	$\frac{1}{2}$-13 x 1$\frac{1}{2}$, STL ZN PLD		
QTY REQD	QTY REQD	ITEM OR FIND NO	QTY REQD	B-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FSCM NO
360013	360012	PARTS LIST						
8223SH	82235							

4	4	4		359877	SPAR			
1		3		339890	FITTING			
1	0	2		359882	HEATED SUBREFL			
0	1			359881	SUBREFLECTOR			
QTY REQD	QTY REQD	ITEM OR FIND NO	QTY REQD	B-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FSCM NO
360013	360012	PARTS LIST						
8223SH	82235							

Figure 4-1. Subreflector Installation, 10-Meter Antenna - Model 8223S and 8223SH, 360012-360013 (Sheet 1 of 2)



NOTES:

3. FITTING, ITEM 3, TO BE ASSEMBLED SO LETTER "T" IS ON TOP.
4. ROUTE CONDUIT, SUPPLIED WITH DEICING CONTROLS, THRU SPAR TUBE SLOT AND CONNECT TO JUNCTION BOX. REFER TO DEICING MANUAL FOR WIRING CONNECTION DETAILS.
5. JUNCTION BOX AND CABLE SUPPLIED WITH HEATED SUBREFLECTOR ASSY ONLY.

Figure 4-1. Subreflector Installation, 10-Meter Antenna - Model 8223S and 8223SH, 360012-360013 (Sheet 2 of 2)

NOTES:

1. TIGHTEN $\frac{3}{4}$ SCREWS TO 260 FT LBS
2. TIGHTEN $\frac{1}{2}$ SCREWS TO 75 FT-LBS.
3. STL CD PLD IS THE ABBREVIATION FOR STEEL CADMIUM PLATED.
4. FOR INCREASED CORROSION RESISTANCE, ALL FASTENERS ARE TO BE COATED WITH WHITE PAINT, EQUIVALENT TO POSTOLEUM NO. 2764, AFTER FINAL TIGHTENING.

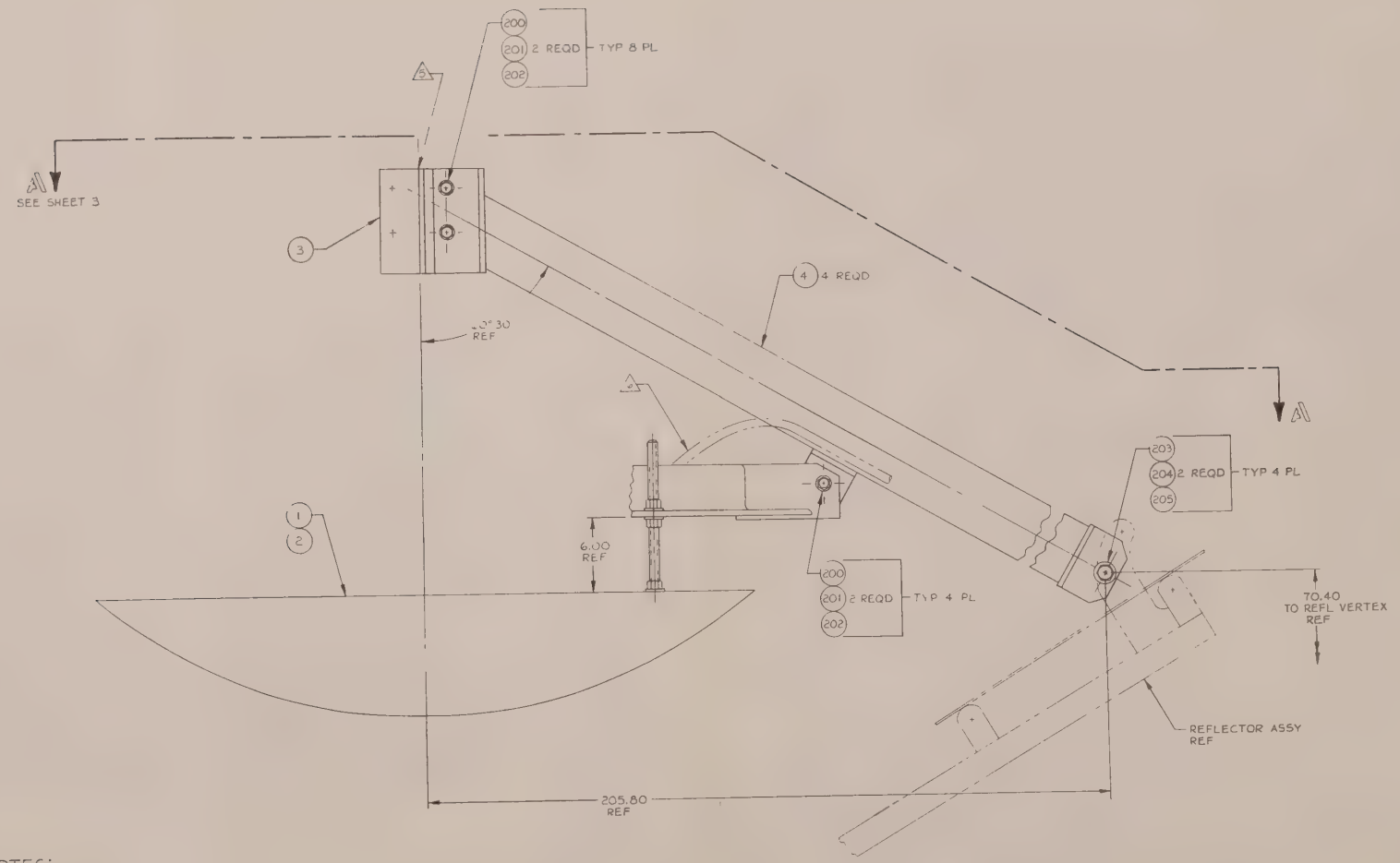
△2 AND △3 SEE SHEET 2.

△1 SEE SHEET 3.

QTY REQD 359393	QTY REQD 359392	ITEM OR FIND NO		S-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE △3	IDENTIFYING OR PART NO	FROM NO
4	4	205		71525	NUT, HEX	$\frac{3}{4}$-10, STL CD PLD		
8	8	204		73292	WASHER, FLAT	$\frac{3}{4}$ STL CD PLD		
4	4	203		72728	SCREW, HEX HD	$\frac{3}{4}$-10X2$\frac{1}{2}$, STL CD PLD		
12	12	202		71518	NUT, HEX	$\frac{1}{2}$-13 STL CD PLD		
24	24	201		73286	WASHER, FLAT	$\frac{1}{2}$ STL CD PLD		
12	12	200		72651	SCREW, HEX HD	$\frac{1}{2}$-13X1$\frac{1}{2}$, STL CD PLD		
8224SH	8224S	PARTS LIST						

QTY REQD 359393	QTY REQD 359392	ITEM OR FIND NO		S-A STOCK NO	NOMENCLATURE OR DESCRIPTION	MATL SPEC AND SIZE OR COMPONENT VALUE	IDENTIFYING OR PART NO	FROM NO
4	4	4		339875	SPAR			
1	1	3		339890	FITTING			
1	0	2		339877	HEATED SUBREFL			
0	1	1		339876	SUBREFLECTOR			
8224SH	8224S	PARTS LIST						

Figure 4-2. Subreflector Installation, 11-Meter Antenna - Model 8224S and 8224SH, 359392-359393 (Sheet 1 of 3)

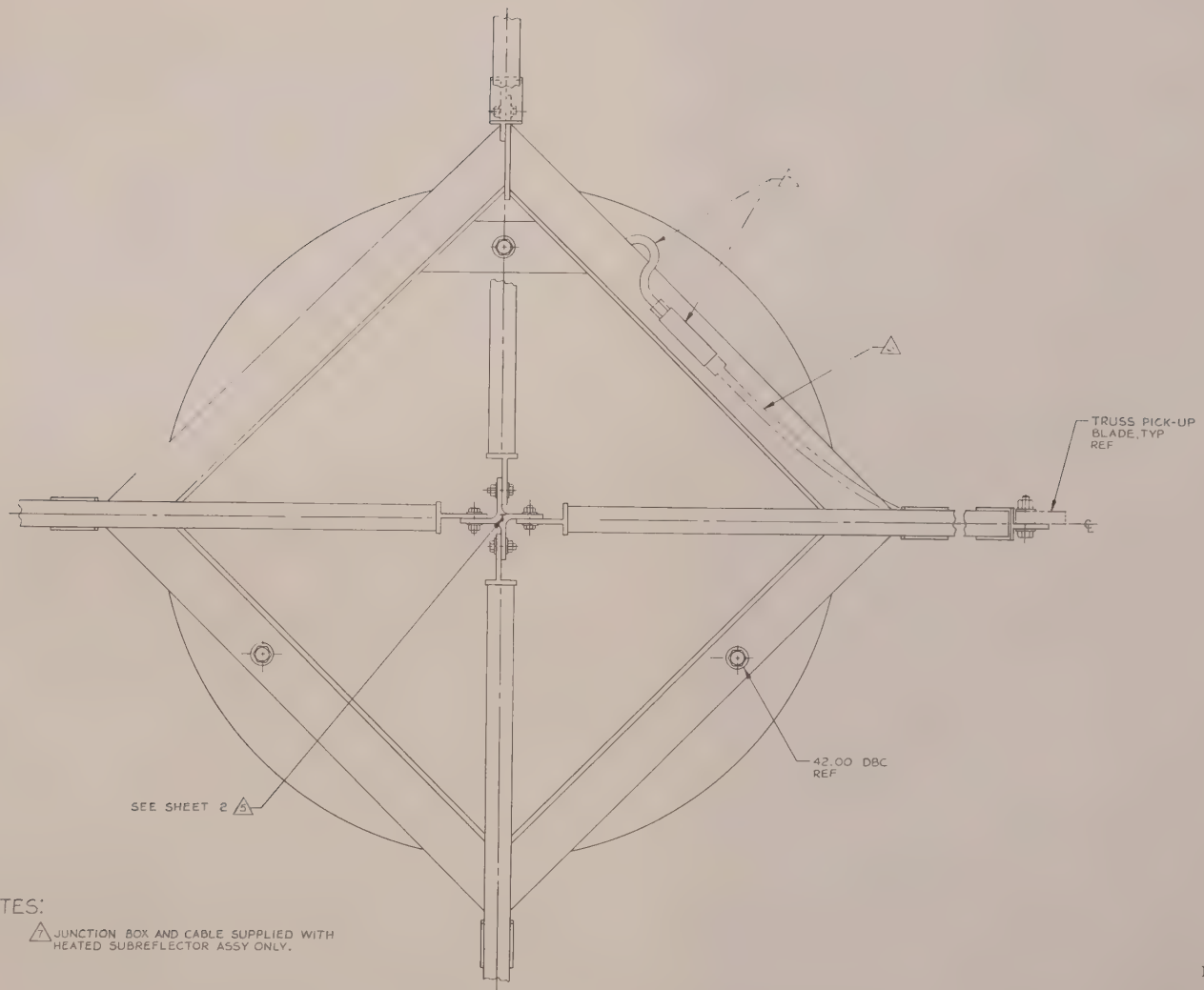


NOTES:

5 FITTING, ITEM 3, TO BE ASSEMBLED SO LETTER 'T' IS ON TOP SIDE.

6 ROUTE CONDUIT, SUPPLIED WITH DEICING CONTROLS, THRU SPAR TUBING, AS SHOWN ON SHEET 2, AND CONNECT TO JUNCTION BOX, AS SHOWN ON SHEET 3. REFER TO DEICING MANUAL FOR WIRING CONNECTION DETAILS.

Figure 4-2. Subreflector Installation, 11-Meter Antenna - Model 8224S and 8224SH, 359392-359393 (Sheet 2 of 3)



NOTES:

1. JUNCTION BOX AND CABLE SUPPLIED WITH HEATED SUBREFLECTOR ASSY ONLY.

Figure 4-2. Subreflector Installation, 11-Meter Antenna - Model 8224S and 8224SH, 359392-359393 (Sheet 3 of 3)

HOT WEATHER GROUTING (TEMPERATURES ABOVE 80°F)

High temperatures accelerating hardening of the grout, reducing the time that the grout remains workable after mixing. It is therefore necessary that either (1) procedures be used which permit placing of the grout more quickly, or (2) the available working time be increased by cooling the mixture and the mount base plates.

If approach (1) is taken, it is suggested that grout be mixed for each base plate separately and poured immediately. Mixing time could be reduced to one minute by use of an electric drill and mixing blade made of steel rod. As an alternative, grout working time may be increased by use of cold materials and cool foundation and base plates (option 2). This approach involves the use of cold or iced water in the mix to keep the as-mixed temperature of the grout under 70°F, preferably between 50°F and 55°F. In either case, the following practices are recommended:

a. Store bags of grout in as cool a place as practicable, but at least in the shade. Avoid exposing the bags to dampness or rain.

b. Give extra attention to saturating the concrete foundation for 24 hours before grouting. Heat and wind cause rapid evaporation; therefore, the concrete should be wet liberally and frequently to prevent drying. Consider the use of windbreaks and sunshades to maintain saturation.

c. Cool the base plates while saturating the foundation by covering the plates with wet cloths and allowing evaporation to cool them.

COLD WEATHER GROUTING (TEMPERATURES BELOW 55°F)

Low temperatures slow the hardening process and keep the grout in a flowable state long enough to permit settlement and bleeding. Although grouting may be successfully accomplished at ambient temperatures as low as 45°F, the rate of strength gain (hardening) is slow and the required time on-site may be excessive. To minimize the curing time that must be allowed before finally torquing the anchor bolt nuts, it is recommended that the grout, mixing water, and mount base plates be warmed to accelerate the curing process. The following procedure is suggested:

a. Store grout in a sheltered place so that the material will be at least above freezing, but preferably above 45°F.

b. Measure the temperature of the base plate and foundation by placing a thermometer on the surface and covering it with a piece of dry insulation or dry rags. If the temperature is above the 55°F minimum, proceed with grouting following the normal procedures. If the temperature is below 55°F, warm the base plate and foundation to bring the temperature above the minimum, using the methods of paragraph A-2, step c.

c. Base plates may be warmed by use of infrared heat lamps or by building a small enclosure around the base plate and introducing heat from a convenient source. Warm the mixing water as necessary to

provide mixed grout at a temperature of 60°F or above, but avoid use of water hotter than 90°F.

d. After pouring, maintain the temperature of the in-place grout at 50°F or above for a minimum of three hours to ensure adequate grout hardness for final tightening of the anchor bolt nuts.

NOTE

Grout will not harden unless the temperature is maintained above freezing. The minimum temperature is 40°F.

GENERAL

During assembly, operation and maintenance of the antenna , it will be necessary that personnel work atop the mount. These persons must follow the procedures outlined below in order for work to proceed safely.

SAFETY PROCEDURES

The following steps are listed in the order in which they should be performed.

a. Position the ladder against the mount so that it rests against one of the upper mount angles.

NOTE

One of the most vital areas of ladder safety is the correct placement angle of the ladder. A simple formula for correct placement is to position the bottom of the ladder at a distance from the vertical plane equal to 1/4 the total working length of the ladder. The working length of this ladder must be longer than the height of the work platform.

b. Before climbing, be sure the ladder is stable.

c. When at the top, secure the ladder to one of the upper angles.

d. Before transferring from ladder to mount, attach safety belt line to antenna mount or reflector.

e. All persons atop the mount must use a safety belt line at all times.

f. No more than two persons should be atop the mount at any one time.

g. Hard hats must be worn by all workers. This applies to workers atop the mount and on the ground.

The parts list is separated into figures by main groups or assemblies and keyed to associated illustration(s) by figure and item or find number and/or reference designation.

a. ITEM OR FIND NO. This column lists the find number or reference designation by which each part is called out on the illustration related to the parts lists. Reference designation may also be found on the applicable schematic diagram.

b. QTY REQD. This column contains the total number of units of this part in the group or assembly. As required (A/R) abbreviation indicates that the quantity required is determined when the unit is installed/ repaired. The notation (*) indicates that this part is not assigned/ used and has a quantity of zero.

c. S-A STOCK NUMBER. This column contains the Scientific-Atlanta stock number.

d. NOMENCLATURE OR DESCRIPTION. This column contains a brief electrical or mechanical description of the part.

e. MATL SPEC AND SIZE OR COMPONENT VALUE. This column contains material specification and size or component value of the part.

f. IDENTIFYING OR PART NO. This column contains the manufacturer's part or identification number.

g. FSCM NO. This column contains Federal Supply Code for Manufacturers' codes. The code numbers are from the Federal Supply Code for Manufacturers' Cataloging Handbooks H4-1 (Name-to-Code) and H4-2 (Code-to-Name) effective on the publication date of this manual. Refer to table 5-2 Manufacturers' Code List for manufacturer's name and address.

Table 5-2. Manufacturers' Code List

FSCM	Vendor Codes	Manufacturer's Name and Address
05972	LOC	Loctite Corp. 705 N. Mountain Rd. Newington, CT 06111

ORDERING PARTS

When ordering parts from Scientific-Atlanta, always include the Scientific-Atlanta part number, the part description, the unit serial number, unit name, subassembly name, part manufacturer, and manufacturer's part number.

MP MASTER
MA29809